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A CASE OF ENLARGED ACCESSORY THYROID GLAND AT THE BASE OF THE TONGUE.

By J. Collins Warren, M.D.,
of Boston.

Benign tumors of the mouth and tongue are sufficiently rare to authorize careful study. The case reported here serves to throw light upon a group of growths whose etiology has hitherto been but imperfectly understood.

Mrs. L. E. S., fifty-two years of age, was sent to me in April, 1892, by Dr. F. I. Knight for treatment of a tumor of the tongue. She was born in Springfield. Her parents both died of consumption, but she herself has enjoyed good health, with the exception of two attacks of pleurisy—the last nine years ago—and is at present stout and strong, and is the mother of three children, all of whom are well. She first noticed a lump in her throat about twenty-two years ago, shortly after her youngest child was born. She was at that time suffering from a "bronchial" affection, and a physician who examined her throat discovered the tumor. Since that time it has been slowly but steadily increasing in size. During an attack of grippe this winter the tumor became swollen and inflamed, and after that the lump seemed to settle back into the windpipe, and has since caused considerable irritation, obliging her to hawk and spit constantly.

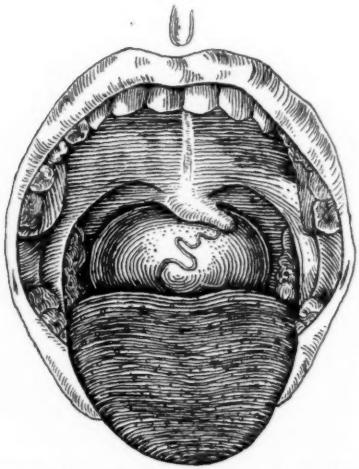
The catamenia ceased about five years ago, but no special change in the tumor occurred at that time.

An examination of the throat showed a tumor about the size of a hen's egg (Fig. 1), situated at the base of the tongue. An examination with the laryngoscope by Dr. Knight showed that it was in no way connected with the epiglottis.

On introducing the forefinger the posterior surface of the tumor could be reached, with some difficulty, and the existence of a space between it

and the epiglottis could be determined. It was covered with normal mucous membrane, and a tortuous vessel of considerable size could be seen running over the anterior surface. The tumor appeared to occupy the lower portion of the pharynx when the parts were quiescent, and it was only by drawing the tongue forcibly forward that it could be brought well into the view. Removal was advised, and the operation was performed May 4, 1892. After etherization a ligature was passed through

FIG. 1.



Showing position of tumor with tongue protruding as far as possible.

the tip of the tongue and the jaws were held open by a gag. As the tumor could not be drawn forward into the cavity of the mouth in this way, two additional ligatures were passed through the dorsum of the tongue on either side of the tumor in the region of the papillæ circumvallatæ. Traction brought the whole tongue forward, so that the tumor presented between the incisor teeth and could be easily operated upon.

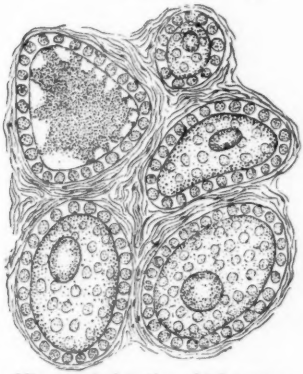
An incision was made on the median line, and the tumor was with slight difficulty enucleated from its position. It appeared to be situated just beneath the mucous membrane, and did not involve the substance of the tongue. A portion of the redundant mucous membrane was excised on either side and the edges of the wound were brought together with catgut sutures. Three vessels required ligature—one of them being of considerable size. The patient made an uninterrupted recovery, and two weeks later returned to her home in Springfield. The patient was seen August 11th. There was no sign of a return of the tumor.

The following is the report of Dr. W. F. Whitney, of the Harvard Medical School, upon the microscopical structure of the tumor:

"The tumor, which had been somewhat torn during removal, was a rounded, slightly lobulated growth, the size of a small plum. The outer

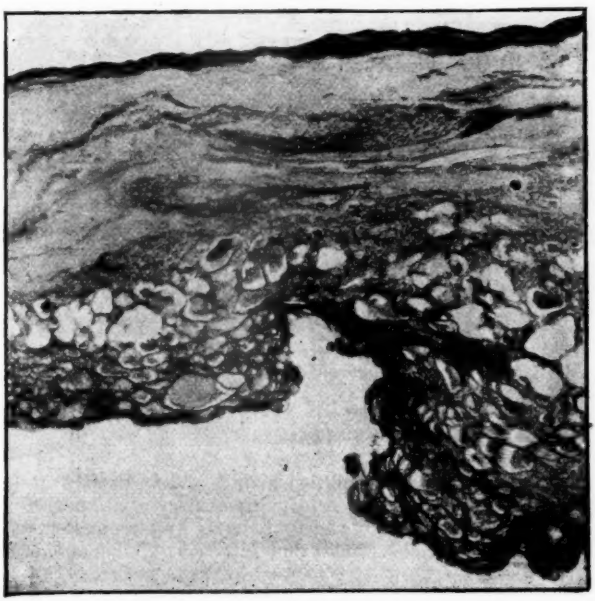
surface was in general smooth and fibrous. The section surface was of a reddish-yellow color, slightly translucent, and marked by minute cysts filled with a viscid yellowish colloid material.

FIG. 2.



Microscopical section—high power.

FIG. 3.



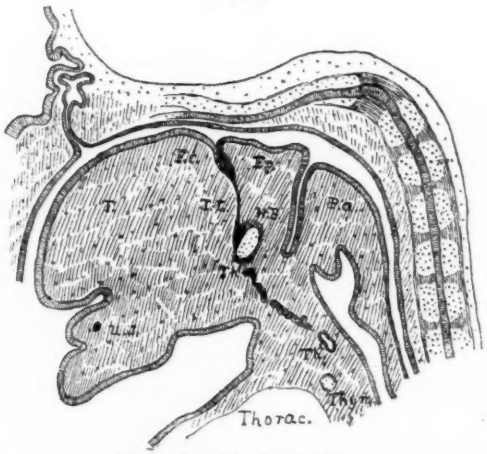
Photograph of section—low power—showing relation of glandular tissue to capsule.
a. Capsule. b. Delicate thyroid tissue partly bruised.

"The bulk of the growth was found, upon microscopic examination, to be made up of closed cavities, varying in size from 0.07 to 0.40 mm. in diameter. The walls of these were clothed with a low cylindrical epithelium, which in the smaller spaces seemed nearly to fill the opening, while in the larger it formed simply a lining, the rest of the space being occupied by a homogeneous substance, staining deeply the picric acid or eosin. The formation of this material by the transformation of the cells could be readily seen in the smaller cysts (Fig. 2). The walls separating the cavities were of a fibrous structure, with relatively few nuclei, varying in width from a mere line to a band of some width. This was directly continuous with wider bands, which divided the growth into irregular, ill-defined lobules, and was spread out upon the surface as a sort of capsule (Fig. 3). In places, vessels were very abundant.

"The structure is that of a ductless gland, with colloid degeneration, and in all its essential histological details corresponds to the thyroid.

"From an embryological point of view a thyroid inclusion is perfectly possible at the place from which this tumor was removed. For, according to the latest investigations,[1] the middle lobe of the thyroid is developed in a track which is directly continuous with the foramen cæcum

FIG. 4.



Thyreoglossal track, after HIS.

T. Tongue. U.J. Under jaw. Thorac. Thoracic cavity. Ep. Epiglottis. H.B. Hyoid bone. F.c. Foramen cæcum. T.L. Tractus lingualis. Th. Th. Thyroid gland. Thym. Thymus gland. P.a. Arytenoid fold.

of the base of the tongue. And this track is still frequently marked in the adult by the so-called processus pyramidalis, a continuation of the middle lobe to the hyoid bone, and more rarely by the accessory thyroid glands described by Zuckerkandl and Kadyi as glandulæ supra and

[1] His: Der Tractus thyreoglossus und seine Beziehungen zum Zungenbein, Arch. f. Anat. u. Physiol., anatom. Abtheil, 1881, S. 26.

epihyoidea. From there it is but a short step to the foramen cæcum and the site of this growth. So, from a consideration of the structure and of the development, there is little doubt that the real nature of this exceedingly rare tumor must be that of the thyroid gland."

A search through literature shows that tumors in this region are rarely observed. Mr. Henry T. Butlin reports, in 1890, two cases of a similar nature.[1]

The first occurred in a female thirty-two years of age, and was thought to be about the size of a hen's egg. Tracheotomy was performed, and the tumor was removed through the mouth by an incision on the median line and scooping out the soft mass. There was a recurrence, but the tumor remained much smaller in size. The second case was also a female, twenty-three years of age. The tumor, which had existed two years, and was smaller than the former, was removed by the galvano-cautery loop.

Butlin has succeeded in collecting eight cases, including the two above mentioned. They were all females, and the ages varied from infancy to thirty-two years. One case is reported as existing near the tip of the tongue, and it seems doubtful, therefore, whether it could be placed in the same category. In one case the tumor was very large and caused the death of the infant a few hours after its birth. In the case reported by Bernays, of St. Louis, there was a decided swelling in the middle line of the neck beneath the root of the tongue, and the bulk of the tumor appears to have been in the substance of the organ. Both Bernays and Sutton have regarded these tumors as accessory thyroid glands. Butlin agrees with this view, although formerly he considered them simple adenomata. Mr. Bowlby is, however, of the opinion that these tumors are derived from the follicular glands at the back of the tongue.

I have myself twice seen tumors at the dorsum of the tongue which were probably of this nature. One was a small tumor removed from the dorsum of the tongue by one of the surgeons of the Massachusetts General Hospital some twenty years since. It was given to me for microscopical examination, and consisted of tissue resembling closely that of the thyroid gland. The second case was seen by me in May, 1888, in consultation with Dr. Knight:

The patient, Miss T., was about twenty-one years of age, and the tumor, according to Dr. Knight's report, was "about the size of the last phalanx of my ring finger." It gave her but little trouble; no operation was advised, and the patient has since been lost sight of.

Wölfler, in his *Monograph on Goitre*, which has recently appeared, mentions the case reported by Wolf (one of those included in Butlin's series) as the only one to be found in the literature of the subject.

It is well to remember that accessory thyroid glands, both lateral and

[1] Clinical Society's Transactions, vol. xxiii., p. 118.

median, may develop into tumors. Among these may be included mucous cysts situated near the hyoid bone or stretching in tubular form from the foramen cæcum to the hyoid bone. Some of the retro-sternal types of goitre owe their origin to those accessory glands which are situated close to the aorta. Tumors below the angle of the jaw or beneath the sterno-mastoid muscle, as well as the retro-pharyngeal, intra-laryngeal, and intra-tracheal tumors, owe their origin to lateral accessory thyroid glands. (Wölfler.)

The ease with which the base of the tongue was brought out of the mouth in this case is worth noting. This was due probably to the relaxation of the parts caused by the presence of a tumor of this size; but in part also to the ligatures passed through the base of the tongue. The posterior pillars of the fauces were made tense by this manœuvre. By dividing them the tongue could have been brought still further forward had it been necessary.

THE GASTRIC DISORDERS OF PHTHISIS.

WITH SPECIAL REFERENCE TO THE CAUSES, PATHOLOGY, AND TREATMENT OF THE SYMPTOM OF VOMITING.

By S. H. Habershon, M.D., F.R.C.P.,
PHYSICIAN AND PATHOLOGIST TO THE ROYAL CHEST HOSPITAL, LONDON.

The Dyspepsia and Vomiting of Phthisis.

It has been said that every disease or every dyscrasia has its own form of dyspepsia.

This is true to a limited extent only in phthisis. There is a strong tendency to dyspepsia and gastric disorders, both in persons of a tubercular diathesis and in all stages of the lung affection. So much so, that some authors have spoken of "dyspeptic"[1] or "gastric phthisis"[2] as a special form of the disease, or of "scrofulous dyspepsia"[3] as a group of symptoms peculiar to tubercular subjects. While it has long been recognized that persons of a delicate constitution are extremely liable to atonic dyspepsia or to gastric catarrh, the features of these complaints do not differ essentially from those occurring under other conditions. If there is a difference, it is to be found in the liability to recur and the intractability of the dyspepsia to drug treatment, apart from favoring hygienic and climatic influences. In other words, an atonic dyspepsia

[1] Brinton: Diseases of the Stomach.
[2] Wilson Philip: Med. Chir.-Trans., vol. vii., 1816.
[3] Mentioned by Wilson Fox: Treatise on Diseases of the Lung and Pleura.

in such a patient will readily yield to the effects of a pure and bracing air and residence on a dry soil, when treatment by drugs alone is futile; whereas, in another subject in whom the primary cause of the atonia is a removable one, or has ceased, the symptoms will subside when tonic treatment is adopted.

When, however, there is disease of the lung, there are more definite causes by which to explain the tendency to dyspeptic symptoms. I do not know of any description of these conditions more lucid than that of the late Dr. Budd.[1] The sympathy between the lungs and stomach may be ascribed (as he has stated) to a reflex nervous influence by which an undue secretion of gastric juice is excited; and the functional disorders of digestion which depend upon this may, in their turn, lead to catarrhal and inflammatory states of the mucous membrane. In the later stages of the disease the obstruction to the flow of blood through the lungs will (he affirms) keep the stomach in a constant state of passive congestion. A small exciting cause will then, as in the previous case, set up inflammatory action and symptoms of greater severity.

A further question enters into the subject of the connection of dyspepsia with phthisis. The want of assimilation of fat has been adduced by some as one of the causes of the development of tubercle. Hughes Bennet,[2] who is the originator of these views, lays stress on the fact that in phthisis "an excess of acidity exists in the alimentary canal," and that, hence, by the neutralization of the pancreatic juice, fats and carbohydrate food are imperfectly prepared for secondary digestion and assimilation. This, however, presupposes a dyspeptic origin for all cases of phthisis, or, if that be not so, there is a fallacy in the argument which gives a primary place to imperfect fatty metabolism in the causation of phthisis, and yet attributes it to a condition of digestion itself dependent on phthisis. While everyone must admit the value and indeed the truth of the observations of Hughes Bennet,[3] it is difficult to regard his theory as a satisfactory explanation of the pathology of tubercle.

Wilson Fox regards the connection between phthisis and the perverted metabolism of fat as an indirect one in the incipient stages of the disease, and others regard the distaste for fat, which occurs so frequently in phthisis, as entirely secondary to disorders of digestion.

One common symptom of the gastric disorders of tubercular disease demands special treatment, and I propose to deal with it at some length in the present paper. *Vomiting* occurs in so large a proportion of the cases that it might almost be described as a characteristic of the dyspepsia of phthisis, were it not that in many instances it has no dependence

[1] Budd: On the Stomach, 1855, pp. 53, 186.
[2] Hughes Bennet: Pulmonary Consumption, 1859. [3] Ibid.

upon any affection of the gastric mucous membrane, but is referable to other and reflex causes.

The "*vomiting*" of phthisis is an accessory symptom of great importance. While in cancerous disease it is a well-known fact that the lower the vitality of the patient the less active is the progress of the morbid growth, the reverse holds good in phthisis. Any cause which tends to a loss of nutrition and to general exhaustion invariably hastens the tubercular process. Digestive disorders are among the most frequent of such causes, and hence the importance both of diagnosing the malady with which they are associated and of combating them with all the means in our power.

In the early literature of phthisis but few authors mention the prevalence of gastric symptoms. Thomas Young, in his work on *Phthisis*, published in 1815, collects the opinions of all the early writers upon the subject. Of these, Aretæus remarks that "in some consumptions there is no expectoration at all, but the patient feels a weight in the chest, with nausea and chills in the evening." Again, Morton, in his *Phthisiologia*, in 1619, notices the characteristic connection between cough and vomiting in early phthisis. In the early part of the present century, Bayle, in 1815, attributes vomiting to the cough or to a sympathetic irritation of the stomach. It is, however, to Louis and Andral, a few years later, that we are indebted for a more complete account of the gastric disorders of phthisis. While admitting that in some cases vomiting might be the result of the cough, the tendency of these authors was to attribute almost all the cases of loss of appetite, nausea, and vomiting, occurring in phthisical patients, to a gastric lesion, and on the other hand, to attach too much importance to the post-mortem appearances of the stomach.

No recent author has devoted so much attention as have those named above to the gastric derangements, although they are briefly referred to in every work on phthisis. Moreover, the only published and succinct accounts of the causes upon which vomiting depends in this disease I find in several papers by French authors of the last fifteen years.

Vomiting may occur at any period during the course of pulmonary phthisis. In the early stages the prominence and severity of the symptoms may completely mask the real disease, and in fact may lead to an error of diagnosis, unless a methodical and careful examination of the lungs has been made. It is these cases which Latham[1] has emphasized when he remarks that those who do not understand the case comfort their patient with the assurance that their disease is "all stomach," and "that it is within the reach of an easy cure."

It is an interesting fact that Lannnec, whose work upon *Auscultation of*

[1] Sydenham Soc. Latham's Clin. Med., vol. ii., sect. xii., p. 15.

the Chest has produced so great a revolution in the accuracy of diagnosis, did not in his own person reap the benefit of his discoveries. He died of tubercular disease of the lung in 1826, but his malady was only recognized a few months before his death, and was then in an advanced stage. According to his son's account his health broke down in 1818 (eight years previously), soon after the completion of his great work. He suffered then from "dyspepsia and anorexia but without redness of the tongue, nausea, vomiting, and diarrhœa with great muscular debility." He recovered in some measure until the failure of his health, about six months before his death.

It is difficult to believe that his disease would not have been recognized earlier had the same accuracy of examination that he himself inculcated been practised by the other physicians of his day.

This class of cases, in which the symptom ushers in the disease, I shall describe under the head of "peripheral or sympathetic vomiting." They must not be confounded with the condition of debility associated with anæmia and vomiting which sometimes precede the active manifestation of tubercular disease. Such a condition, and in fact any which lowers the vital functions, favors the deposit of tubercle and encourages its activity. At the same time it is not always possible to determine whether the anæmia and debility are not the manifestation of a latent tuberculosis rather than the predisposing cause. This applies especially to out-patient practice in the hospitals; for, if the patient is under careful clinical observation, the presence of an elevated evening temperature will be an important guide to diagnosis, and should raise the suspicion of disease of the lungs, even though the physical signs may not by themselves be sufficient to warrant it.

Another source of peripheral irritation is to be found in the mucous membrane of the pharynx and larynx. This may occur at any period of the disease. In an important class of cases there seems to be good evidence that there is interference with the trunk of the pneumogastric nerve by the pressure of enlarged bronchial glands. This view is insisted on by many French writers on the subject, to whose views I shall have occasion to refer. In other patients it is the violence of the cough that leads to the rejection of the contents of the stomach. This has been known by the name of mechanical vomiting. At all stages of phthisis the stomach itself may be affected. This vomiting from gastric disease may be produced by any degree of irritation, from simple catarrh to acute and chronic inflammation, and more rarely ulceration; while frequently at the close, its muscular and mucous coats become atrophied and softened, so that the function of digestion is greatly impaired. From any one of these causes the fatal persistence and obstinacy of the symptom may hasten the termination. Lastly, the occurrence of vomiting in the young may sometimes depend upon central irritation and

precede a set of symptoms which are dependent upon the formation of miliary tubercles in the membranes of the brain. A phthisical patient is not free from other coincident affections capable of causing vomiting which are not themselves part of the tubercular malady. He may be an alcoholic subject and be affected with cirrhosis of the liver, or he may suffer from simple ulcer, or from cancerous disease of the stomach. I do not propose to enter into detail with regard to these cases, but it is important to remember that two different diseases may coincide in the same subject. On the other hand, certain sequelæ of phthisis may be present, such as amyloid disease of the kidneys, or of the vessels of the stomach, or fatty degeneration of the liver, and the disorders of digestion to which these predispose may be a further source of aggravated vomiting.

The subject of vomiting is a most complex one, and, to enable me to tabulate the various causes and conditions under which it occurs in tubercular disease, I shall briefly describe its physiology and the means by which the act can be produced.

Vomiting consists in the forcible expulsion of the contents of the stomach through the œsophagus and mouth.[1]

It is a reflex and spasmodic movement, consisting of two main factors: (1) The contraction of certain muscles by which the stomach is forcibly compressed. (2) The active relaxation of the cardiac orifice of the stomach, or end of the œsophagus.

The diaphragm is depressed by a deep inspiration, and with a closed glottis the sudden expiratory movement which precedes the act of vomiting causes the whole force of contraction of the abdominal muscles to be exerted upon the stomach. A second factor, however, is necessary. Majendie,[2] by his classical experiment, established the fact that the stomach plays an entirely secondary part in the act. It facilitates expulsion of its contents by its own peristaltic movements, but vomiting can be produced, as he has shown, when a bladder or bag is substituted for it—not, however, according to Schiff,[3] unless the cardiac orifice with its dilating-mechanism be left intact.

While the expiratory effort is being made, the longitudinal fibres of the œsophagus contract, as well as the muscular fibres radiating from the cardiac end of the œsophagus over the stomach, and the diaphragm remaining fixed, their contraction, instead of pulling down the œsophagus, as it would if they had not a fixed point upon which to act, aids in dilating the orifice.

Both of these two factors then are essential before the contents of the stomach can be rejected.

[1] Lauder Brunton: Pract., 1874.
[2] Majendie: Mémoire sur le Vomissement.
[3] Dr. Michael Foster: Physiology, 3d ed., p. 274.

When the abdominal muscles and diaphragm contract without the œsophageal muscle, retching is the result, and the contents of the stomach are unable to pass the contracted cardiac orifice; otherwise vomiting would be the result of every violent fit of coughing, and we know that in diseases other than phthisis, in which cough is a prominent symptom, vomiting rarely occurs. I would even go so far as to assert that when the history of the patient reveals frequent vomiting with the cough, I have been led to regard it as strong presumptive evidence of the existence of phthisis (with the single exception of whooping-cough).

For the coördination of the movements of these various muscles nervous influence is essential. The centre from which the impulses proceed is evidently in close connection with the respiratory centre in the medulla. Efferent impulses must descend by the various respiratory nerves to cause the contraction of the muscles of respiration. But the nerve controlling the dilatation of the œsophageal sphincter is the vagus, and this is the nerve by which efferent impulses descend from the centre; and it is probable to a greater extent by the left vagus than the right. The act of vomiting may be produced by impulses starting from the centre in the medulla, by direct irritation of the centre itself, by disease in its neighborhood, or by the condition of the blood.

Further, the effect on the centre may be produced in a reflex manner by impulses reaching it by a variety of afferent paths. Those with which we are concerned in the present subject are mainly branches of the vagus (and it will be remembered that the nerve contains both afferent and efferent fibres).

a. Branches of the vagus:
  Gastric branches—irritation, inflammation, or ulceration of the stomach.
  Pulmonary branches.
  Laryngeal branches.

b. Pressure on any part of the trunk of the vagus.

c. Pharyngeal branches of the glosso-pharyngeal nerve.

I shall describe the forms of vomiting in phthisical patients under the following heads:

I. Peripheral or sympathetic vomiting.
  a. Irritation of the peripheral terminations of the pulmonary branches of the vagus.
  b. Irritation of the pharyngeal and laryngeal mucous membrane, including the epiglottis.
  c. Interference with the trunk of the vagus by enlarged bronchial glands (adenopathie tracheo-bronchique.)

II. Vomiting due to the violence of cough (so-called mechanical vomiting).

III. Gastric vomiting proper. (Irritation of gastric branches of the vagus.)

IV. Central irritation. (Tubercular meningitis.)

I. Sympathetic or Peripheral Vomiting.

A. *Irritation of pulmonary branches of the pneumogastric.* This occurs in some cases at the commencement of pulmonary phthisis, at a period when the diagnosis is not easily made, and depends upon a careful examination of the lungs. Of this Fagge remarks: "I have known instances in which medical men have been led by it into the grave error of supposing that the patient's complaints were all due to the disorder of the stomach." In these cases vomiting is not only a conspicuous, but the main symptom. Food is rejected almost as soon as it is taken, but there is no pain or even tenderness at the epigastrium. The appetite is unimpaired, usually, and the tongue is clean or thinly furred. When the stomach is empty there is no inconvenience felt. There is sometimes anæmia, but by no means to a marked degree, and when present it can be traced to the inability to retain nourishment.

The patient's own account is misleading. He is so absorbed with this prominent symptom of his complaint that the cough is often ignored or unnoticed. Still, persistent inquiry will elicit the fact that there has been a dry cough for perhaps some weeks or even months.

In some cases the vomiting is preceded by a sense of suffocation and by slight cough, but not by a violent fit of coughing. The presence of food in the stomach appears to produce a reflex effect at other terminations of the vagus.

This form of vomiting is said[1] to occur more frequently in women than in men; but in the cases that I have collected, up to 1888,[2] I find that, out of a total of thirty-seven derived from three hundred and sixty cases of phthisis in both sexes, twenty-one cases of sympathetic vomiting were present in men, as compared with sixteen in females.

The physical signs are usually confined to one or both apices, and are often so slight as to escape notice. Rough or coarse breathing, with increased expiration and a slight increase of vocal resonance, or, more important still, a feeble or interrupted respiratory murmur, may be all that is detected. Before long, however, the disease in the lungs develops. A few moist râles appear, at first only after cough, but later accompanying both the inspiratory and expiratory murmur; while the breath-sounds become tubular and bronchial, voice resonance and vibrations are increased and impairment of percussion resonance becomes manifest.

[1] Wilson Fox: Treatise on Diseases of the Lungs and Pleura, 1891, edited by Dr. Coupland, p. 821.

[2] St. Bartholomew's Hospital Reports, vol. xxiv., p. 139.

The above signs may be rapid in their development, covering the space of a few weeks at most.

With the increase of physical signs cough and expectoration appear or increase, while it is a striking fact that the troublesome vomiting will subside and finally disappear. The cause of vomiting in this class of cases is to some extent obscure. It cannot be attributed to the cough, for this is often scarcely noticeable and only becomes prominent with the cessation of vomiting. There is no evidence of gastric catarrh, for the clean tongue, the natural appetite, and the complete absence of pain or epigastric tenderness would preclude this. Further, the absence of any marked degree of anæmia or of more than a slight constitutional disturbance (a moderate elevation of temperature of no more than a degree or two at night) leads us to seek a further cause for the symptom.

An explanation that seems plausible and that has often been adduced is that the early deposit of tubercle irritates the peripheral terminations of the branches of the vagus in the lungs and produces a reflex effect upon its gastric branches through the centre in the medulla. With the softening of the tubercles, as evidenced by the development of moist sounds and other signs in the lungs, the pressure upon and irritation of the vagus terminal fibres is relieved and vomiting ceases.

David Craigie, in 1840, notes this disappearance of vomiting in the early stage of phthisis. He attributes the symptom, however, to the rigors and fever which, he says, are present. He adds: "The appetite, nevertheless, is not much impaired, and the patient often takes food with much eagerness and enjoyment. The tendency to vomit vibrates and finally ceases as the progress of the distemper advances from the inflammatory to the softening stage."[1]

The presence of rigors or fever, except in acute tuberculosis, is not a usual experience at an early period of the disease. I cannot say that I have ever observed more than a slight evening rise of temperature such as I have mentioned.

I have referred to the views of Budd,[2] in 1855, upon sympathetic irritation of the stomach, and he applies these to the vomiting as well as to the dyspeptic symptoms of phthisis.

In his Lumleian lectures for 1876,[3] my father mentions this cause of vomiting. "The irritation of the pulmonary branches of the pneumogastric," he says, "is a common cause of disturbance of the stomach, and constant vomiting is the result." He adds that "it will often be found that when the disease in the chest has advanced the vomiting suddenly ceases, but only to reveal disease of the lung which has made

[1] David Craigie: Practice of Physic, 1840, vol. ii. p. 996.

[2] Budd: Loc. cit.

[3] Habershon: On the Pathology of the Pneumogastric Nerve, 1876.

insidious progress during the time when treatment of the thoracic disease might have been most efficacious."

The prognosis of such cases is, as far as my experience goes, invariably bad. I have seen several in the course of six years' out-patient practice at the Royal Chest Hospital, and in no single case has the patient lived more than a year (and some for no longer than six months) after the first manifestation of physical signs in the lungs. I am led, therefore, to take a gloomy view of this form of sympathetic vomiting, on the ground that the symptom is probably an evidence of the rapidity of spread of tubercular centres of deposit and an index of an acute irritation.

B. *Irritation of the pharyngeal and laryngeal mucous membrane.* The vomiting centre in the medulla may be thrown into action by irritation proceeding from the fauces, soft palate, and pharynx, or from the mucous membrane of the epiglottis and ary-epiglottidean folds. This action is purely reflex, and can be produced physiologically, as when any of the above parts are irritated by touching them with a feather. The afferent nerves, whose peripheral endings are stimulated, are either glosso-pharyngeal or the pneumogastric branches of the tenth pair.

Vomiting is even more likely to occur when the mucous membrane is in an irritable or hypersensitive condition. In phthisical patients the throat and larynx are extremely liable to suffer, and the sensibility may be exalted by a variety of conditions, the simplest and indeed the most common of which is ordinary acute or chronic catarrh. Frequently the inflammatory state does not extend above the level of the epiglottis and its folds, while these are seen by the laryngoscope to be red and their vessels injected. In other cases there is chronic catarrh of the pharynx, with a long, pendulous, and relaxed uvula, which leads to an irritable cough, especially when the patient lies down. Granular pharyngitis is a common condition, and it may be observed in every stage, from the simplest to that of extreme hypertrophy of the mouths of the mucous follicles. Laryngeal catarrh frequently precedes, and probably predisposes, to the more grave affection of the larynx known as tubercular laryngitis, due to the infiltration of certain parts by a deposit of tubercle.

Perhaps the commonest appearance is one which is often regarded as pathognomonic of the affection—a pale pyriform swelling of one or both arytenoid cartilages with thickening of the ary-epiglottidean fold. But it is in the later stages of the affection that symptoms are produced and become prominent, though the voice is early affected. This is the stage of ulceration. Ulcers occur in the inter-arytenoid region and at the posterior part of the vocal cord, or on some part of the ary-epiglottidean folds, commonly also on the posterior surface of the larynx. According to Mackenzie, the ulcers on the cords are generally bilateral.

The disease may extend in an upward or downward direction. In an advanced stage the epiglottis is often œdematous and ulcerated. In some cases ulceration is most extensive, and leads to the passage of food into the trachea.

Downward, the ulceration may spread to the parts beneath the vocal cords, leading to perichondritis of the cartilaginous structures and ulceration of the trachea.

Sometimes tubercular ulcers are seen on the fauces, soft palate, or the back of the pharynx, and are accompanied with great soreness of the throat and painful deglutition.

Small, shallow, non-tubercular ulcers (superficial erosions) also occur in phthisical patients on the pharynx, or in the larynx or trachea.

In the catarrhal affections of phthisical patients the symptoms produced are those of ordinary catarrh. Sore-throat and irritability followed by cough, and sometimes retching or even vomiting with the cough; hoarseness or aphonia and hyperæsthesia of the mucous membrane of the pharynx. If the catarrh is antecedent to the tubercular laryngitis it is succeeded by more severe symptoms, which become still more pronounced in the later and ulcerative stages of the laryngeal affection.

Deglutition now becomes painful, and the act of swallowing, or indeed any movement, may, in bad cases, be dreaded by the patient. This is specially the case when the epiglottis is ulcerated, or where there is perichondritis of the laryngeal cartilages, or where the posterior parts of the arytenoids bordering on the œsophagus are ulcerated.

Vomiting in such patients, as well as in those who suffer from catarrh or ulceration of the pharynx or throat, is very easily produced. It frequently occurs after a fit of coughing, but in some cases it is caused by the act of swallowing, and is not necessarily accompanied by cough.

c. *Tracheo-bronchial adenopathy.* By this term is meant the enlargement of certain of the mediastinal glands at the root of the lung and in the neighborhood of the large bronchi, which, by their compression of the pneumogastric trunk, produce certain symptoms. Though not strictly a peripheral affection, it is convenient to include the cases of vomiting, presumably due to this cause, in the present group; for the symptoms produced may fairly be described as sympathetic.

My description of the affection is mainly gathered from the writings of certain French authors—Dr. Guéneau de Mussy and his pupils, MM. Baréty, Varda, Simmoneau, and others. In a paper in the *St. Bartholomew's Hospital Reports* I have quoted some of the literature of the subject, and it is not, therefore, necessary to repeat this. Suffice it to say, that several cases have been recorded in the earlier part of the century in which the observers have attributed certain symptoms to

pressure upon the pneumogastric nerve; and in others, in which the diagnosis has been made, the nerve has been found, after death, tightly compressed (and, in more than one case, disorganized) by enlarged glands. The main symptoms thus recorded comprise attacks of vomiting and dyspnœa, with a peculiar cough, something like whooping-cough.

No doubt exists that the glands in phthisis, and especially the mediastinal glands, are very frequently enlarged and caseous—that is, infiltrated with tubercle; and the importance of these scrofulous or tubercular glands was early appreciated by many writers on phthisis, notably in children, but also in adults. Guéneau de Mussy's interesting account in the *Clinique Médicale* for 1884, vol. iii., and the numerous examples of the disease that he has collected, would seem to leave no doubt that in some cases the enlarged glands produce very definite symptoms by pressure. In England his views[1] have not been altogether accepted, partly because he attributes the symptoms of whooping-cough to the same cause (pressure on the vagus), and some of the best of our English authorities have differed from him in his explanation of the pathology of that affection.

Among the symptoms which are attributed to compression of the pneumogastric are:

1. *Pain* referred to the situation of the manubrium sterni, or to the first two costal cartilages and the neighboring interspaces on either side, or to the position of the fourth or fifth dorsal vertebræ behind. The pneumogastric nerves in the neck have also been sensitive to pressure.
2. A spasmodic and frequently a laryngeal cough, in many cases of the nature of whooping-cough (Toux coquelucoide), and more rarely aphonia.
3. Vomiting, and occasionally dyspepsia with gastralgia.
4. Congestion of the base of the lung on the corresponding side.

Physical signs, if any are present, are more easy to detect in children, but they are described by De Mussy in several cases in the adult.

If the lung on the affected side is not universally infiltrated with tubercle, impaired resonance may be detected in the mediastinal region in the situations described as the occasional seat of pain. The respiration is altered, but the alteration depends rather upon the consolidation of the lung, or upon the compression of the bronchus in the neighborhood of the enlarged glands. Weak breathing is said to be commonly present.

The symptoms upon which stress is laid as a means of diagnosticating the affection are: repeated vomiting accompanied with a cough of peculiar nature.

[1] See Brit. Med. Journal, Jan. and Dec., 1879.

De Mussy takes the view that an affection of the left side is far more frequently associated with vomiting than when the right pneumogastric is irritated, and that the vomiting appears more obstinate. He bases his opinion on his own independent observations, though he quotes others who have noticed it. In a number of cases collected by Simmoneau,[1] in which vomiting was believed to be due to compression of the pneumogastric, ten out of thirteen occurred on the left side. This coincidence has been attributed to the anatomical distribution of the branches of the vagus nerve and to the results of physiological experiments on the functions of the two nerves.[2]

It is not only in the disease described by De Mussy that the symptom of vomiting occurs more frequently when the left lung is affected. In my paper, published in the *St. Bartholomew's Hospital Reports* for 1888, I have endeavored to inquire into the truth of a floating opinion which I had frequently heard expressed that left apex phthisis is more often associated with vomiting than the right apex disease. I have examined the statistics of some 360 cases under my care, and find that generally the symptom occurs in 67.3 per cent. of left apex cases as compared with 27.8 per cent. of the right apex.

This, however, includes all cases of vomiting from whatever cause, and it is evident that some causes common to all, such as laryngeal irritability or a gastric catarrh, may produce the symptom, irrespective of the particular side affected by the tubercular disease. When the cases of sympathetic vomiting alone are considered, the figures are even more striking. Of thirty-four cases, the left lung is affected in thirty, and the right lung in four; in other words, about 88 per cent. are left apex cases and 12 per cent. right apex. The point is not an important one, nor are the statistics sufficiently large to establish a rule; but the result appears to be more than accidental, and may fairly be attributed to the anatomical distribution of the branches of the left vagus nerve.

II. Mechanical Vomiting, or Vomiting Due to the Violence of Cough.

Vomiting with cough has been recognized by most writers upon the disease as a frequent accompaniment of phthisis.

In 1619 Morton[3] considers that "cough, with a disposition to vomit, while the appetite remains good, is almost a characteristic of early phthisis." Bayle[4] in 1815 remarks that vomitings are frequent in

[1] Simmoneau: Thèse de Paris, No. 115. Des Vomissements chez les Phthisiques, 1881.

[2] Claude Bernard: Physiologie de Système-Nerveux.

[3] Morton: Phthisiologia, London, 1619.

[4] Bayle: "Recherches sur le Phthisie Pulmonaire," translated by William Barrow, 1815.

phthisical persons, and often arise from severe fits of coughing. Louis[1] (in 1825) believes that cough alone can provoke vomiting, but seldom, however, and then usually at the commencement of the malady. In these cases there is no epigastric pain, the appetite is good and digestion easy. Sir James Clark,[2] in his work on consumption, in 1835 says: "It becomes a matter of some moment, in a practical point of view, to distinguish the vomiting which occurs in the course of consumption (and which is commonly attributed to the cough) from that which depends on a morbid state of the stomach. When the vomiting is simply the result of the cough we find no epigastric tenderness or pain, the appetite remains, and the digestion in the intervals of coughing goes on well. It frequently occurs at the commencement of the disease."

Other authorities differ greatly in their views as to the influence of the cough upon vomiting.

Andral[3] refers almost all cases of vomiting provoked by cough to a morbid condition of the mucous membrane of the stomach; while others have shown that such a pathological state may exist without symptoms. On the other hand, some believe that vomiting is always preceded by cough, and often caused by the cough,[4] while others deny that cough alone is able to produce the symptom.

It is recognized, however, at the present time, that when all reflex sources of irritation are eliminated, some of which I have already considered, there still remains a large class of cases in which the cough appears to be the chief factor concerned in the production of the act. To these cases the term "mechanical vomiting" has been applied. By the word "mechanical" is implied the compression to which the stomach is subjected by the contraction of the abdominal muscles in the act of coughing. In other diseases the term is applied to vomiting due to an obstruction of some part of the alimentary canal. Typical mechanical vomiting is to be seen in a case of pyloric disease. In the present connection, however, the expression is used in a different sense, and perhaps not with strict accuracy.

We have seen that besides the contraction of the respiratory muscles, a second factor is necessary before the reflex act of vomiting is produced, and that this factor is the dilatation of the so-called cardiac sphincter of the stomach. Also, that in many other diseases of the respiratory system accompanied by cough, retching is often the only result of the cough, however violent. In other words, the abdominal muscles compress the stomach, but its orifice remains contracted and the contents

[1] Louis: Recherches sur le Phthisie, 1825.
[2] Clark: On Consumption, 1835.
[3] Andral: Clinique Médicale, 1836.
[4] Guéneau de Mussy: Clinique Médicale, 1884, vol. iii.

are not expelled. Now, it is obvious that for the relaxation of this œsophageal orifice of the stomach one of two conditions is necessary. Either an active dilatation, which is reflex in nature and depends on the pneumogastric influence, or a passive and paralytic condition of the lower end of the œsophagus, by which the muscular tone is lost and the orifice permanently unclosed.

Now, excluding all evident sources of irritation, we have still to consider how cough alone may, in phthisical patients, result in vomiting more frequently than in bronchitis or other respiratory diseases.

Cough may be produced in various ways in the course of phthisis. It may be dry and out of all proportion to the amount of secretion. In this case it is generally due to an irritable condition of the terminal fibres of the expiratory nerves in the lungs and bronchial tubes. On the other hand, it may be, and commonly is, the effort to expel what is practically a foreign body—beneficial, and not harassing, if the expectoration is loose and fluid, but violent in the extreme if the expectoration is viscid and tenacious.

Lastly, the cough may be what has been called a stomach cough, or, as Morgagni first showed, produced by irritation independent of the lungs (for example, even when the membrane of the tympanum is touched). In such cases the mere presence of food in the stomach may produce cough.

Clinically, mechanical vomiting will be found to occur in three different classes of cases. In a large number the violent cough occurs in the early morning on waking from sleep, or soon after rising, and at bedtime. In these the cough has usually been the effect of the difficulty in expelling the secretion, which the patient will describe as thick and often of unpleasant taste. In these patients there is often a degree of irritability or sensitiveness of fauces and pharynx, with or without inflammatory trouble, which is quite sufficient to explain how the reflex factor is supplied.

In a second class of cases, the vomiting occurs chiefly after meals. As soon as food is taken into the stomach, or, at most, half an hour to an hour afterward, cough is provoked, and vomiting speedily follows. There is no doubt of the absence of any gastric cause except what may be broadly defined as irritability, for there is often no pain or flatulence, no tenderness in the epigastrium, the tongue is clean and the appetite unimpared.

Dr. Douglas Powell has described the mechanical vomiting as follows: "This distressing symptom is especially characteristic of the more indurative forms and stages of the disease. It is primarily due to the mechanical difficulty in expelling secretion from cavities and bronchial tubes surrounded by dense airless consolidation, and secondly, it is

distinctly to be observed that there is undue irritability of the vagus, giving rise to cough directly food is taken into the stomach."

There is, according to my own experience, a rough distinction between the two classes of cases I have named, though naturally there can be no such thing as an arbitrary division. Many cases of vomiting after food of this kind, in which there appears to be an abnormal irritability of the pneumogastric terminations both in lungs and stomach, occur early in the course of the disease (as M. Ferraud, in the Union Médicale, 1883, has stated) while I have seen others in late cases of disease with considerable consolidation and contraction of lung, or with cavitation. On the other hand, the morning and evening vomiting which appears to be associated with a tenacious sputum and a difficulty of expectoration is more often found in the well-marked or advanced disease, and with or without this gastric irritability.

A third class of cases still exists, in which no special irritability of stomach or fauces and pharynx is present. In these cases the vomiting is far more frequent after the evening meal only, or when the patient has been in bed an hour or two. There is some difficulty in explaining the cause on physiological or pathological grounds.

An interesting suggestion is made by Ruehle, in *Ziemssen's Encyclopædia of Medicine*. He remarks that "The nervous centre from whose irritation the reflex action of coughing proceeds is situated very near the center concerned in the act of emesis; the irritation probably passes readily from one to the other, and the more readily when the existence of pharyngeal or laryngeal catarrh keeps the vomiting centre in an irritable condition."

So far, it appears that cough is in a large proportion of the cases supplemented by a state of irritability at one or other of the terminal branches of the vagus.

But in advanced stages of tubercular disease there is not the same difficulty in explaining why food should be speedily ejected when cough occurs. The general loss of nutrition leads to muscular atrophy, and it is a common thing to find the stomach, apart from any more acute morbid condition, in a state of extreme wasting. Not only the mucous membrane but the submucous and muscular coats are attenuated and softened, and toward the close of life digestion is impaired, not only from the atrophy of the secreting gastric glands, but from the imperfect and feeble peristaltic movements. It is easy to conceive that the cardiac orifice of the stomach is then permanently relaxed, and cough will be extremely likely to determine the act of vomiting. It must, however, be remembered that when there is considerable dilatation of the stomach, a sequela which is not unusual, vomiting is sometimes, and indeed frequently, absent.

III. Gastric Vomiting.

"Of all the organs the digestive tube, next to the lungs, presents the most common lesions in phthisis." Such was the experience of Andral[1] and Louis,[2] the two great authorities of the earlier part of this century, who have called attention to the gastric disorders of phthisis.

These authors have described with great completeness the various pathological changes that are to be found in the mucous and other coats of the stomach after death. Out of nearly one hundred autopsies, Louis found the stomach unaffected in seventeen cases, that is, about four-fifths presented a well-marked morbid state. Andral found a similar condition in about three-fifths of his cases.

Louis describes these pathological changes under several heads.

1. White softening of the gastric mucous membrane with diminished thickness of the coats.

2. Inflammation of the mucous membrane of the stomach, its walls thickened, and the mucous surface injected (the redness often confined to the anterior wall) and softened.

3. Red softening of the mucous membrane of the great cul-de-sac, accompanied by a mammillated appearance. (This he considers a more chronic affection than any other).

4. Simple ulceration of the gastric mucous membrane, often superficial, and in some cases with thickening in the intervals between the ulcers.

The symptoms of these lesions were variable, and usually confined to an advanced period of the disease. They were mostly preceded by anorexia, and accompanied by epigastric pains, nausea, and vomiting (sometimes of unaltered food but usually of a bilious character) associated with a red or furred tongue. This group of symptoms was most frequently observed in cases which presented, after death, a thinned and softened or an ulcerated mucous membrane. Of the mammillated condition, he remarks that he has been unable to detect any symptoms by which it could be recognized, and in the cases of red softening he observed distinct symptoms only a few days before death.

In a few cases where the combination of epigastric pain, anorexia, and vomiting occurred, no gastric lesion was found.

Andral[3] attributes the gastric disorders in phthisis to an inflammatory condition of the gastric mucous membrane. He narrates most fully the various shades of symptoms which the gastritis produces in the different stages of the disease. In his own words "The functional disturbances, of which the stomach of phthisical patients is the seat, should

[1] Pathological Researches on Phthisis, by Louis (trans. by Cowan), 1835.
[2] Andral: Clinique Médicale (Spillan trans.), 1836. [3] Loc. cit.

be referred in the great majority of instances to an inflammation, either acute or chronic, of this organ; but there are many cases in which the organic alterations are a result neither of inflammation nor even of any process of irritation or congestion. . . . These consist of extreme attenuation, real atrophy of the parietes of the stomach."

The appearances described by Andral are in many respects similar to those of Louis' cases. The mucous membrane of the stomach presented an inflammatory injection in some cases, more frequently in the great cul-de-sac, and without any change in the subjacent tissues.

In others it was of a brown, slate colored or gray tint, either in patches or universally. Frequently the mucous membrane was softened, sometimes red or pulpy, at others, white and jellylike, the extent of softening varying from that of mere alteration of its natural consistence to a complete exposure of the submucous cellular tissue. More rarely ulceration was found, in some cases with thickening of the tissues, and in a number of cases the parietes of the stomach were atrophied with a thin mucous membrane and a wasted muscular coat.

Dr. Carswell, in his *Pathological Anatomy* in 1838, called attention to the fact that a large number of these appearances, and especially the white softening of Louis, were due to a post-mortem change produced by the action of the gastric juice. According to him, John Hunter first observed this lesion (softening), and described it as "digestion of the walls of the stomach after death, and as the immediate consequence of the solvent property of the healthy gastric juice."

Carswell notes that in France the opinions of Hunter were at first received with doubt, and afterward turned into ridicule, and in consequence the post-mortem effects of the gastric juice were continually described as pathological lesion. The memoir of Louis on "Ramollissement avec Ascincissement et de la Destruction de la Membrane muqueuse de l'Estomac" is, he says, a striking example of this kind.

The situation of these changes, according to Carswell, is usually in the most dependent part, viz., the fundus or in any other part which has accidentally acquired a dependent position. The appearances he describes as resulting from post-mortem change are those of softening, erosion, or even perforation. The degree of softening varies from a slight diminution of consistence of the coats of the stomach to their conversion into a gelatinous pulp. In more extreme cases the mucous membrane has disappeared either in patches or over its entire extent, leaving the submucous coat denuded.

Further, when the membrane has been thrown into folds, the softening occurs in the form of bands or stripes of various dimensions described by Louis as a pathological condition.

Alterations in color accompany these changes. An extreme pallor is often observed, which accounts for the "ramollissement gélatiniform"

described by Cruveillier. On the other hand, the coloring matter of the blood may be altered by the acidity of the gastric juice producing shades of dull yellow-brown, or even black or ashy-gray.

Such is the description of Carswell, and his views are now generally received, for they have been abundantly confirmed by other observers.

My father[1] has entered very fully into the changes produced by post-mortem digestion, and in addition to his own observations has quoted the views of Wilkinson, King, and Budd, and the more recent researches of Pavy. He finds these changes occurring not only in phthisis, but after other diseases, especially cerebral, and in young children, where the gastric follicles have been irregularly stimulated and pour out an excessive secretion.

Two other facts tend to further diminish the value of Louis and Andral's pathological investigations. The first has reference to the reliance that is to be placed upon a post-mortem condition of vascularity as a sign of a precedent gastric catarrh.

There is no doubt that during life, irritation, catarrh, or an inflammatory condition produce varying degrees of redness of the gastric mucous membrane. This has been established by the observations of Beaumont upon the living subject. When a state of catarrh was produced he observed eruptions or deep-red pimples upon the internal coat of the stomach, and at other times irregular red patches of different sizes, with aphthous crusts in some cases.

After death, however, it is generally agreed that the mere presence or absence of vascularity cannot be relied on as a proof of previous inflammation or the reverse. Wilson Fox[2] has expressed this in his writings. He shows that the hyperæmia of inflammation is very liable to disappear after death, either owing to the action of the gastric juice or to capillary contraction. He points out, however, that if there has been a condition of stasis in the bloodvessels before death, hyperæmia and even extravasation of blood is likely to be produced, which will remain after death, and he brings abundant evidence from various observers to show that such vascularity does not by any means prove a previous state of inflammation.

These appearances in cases where there has been no sign before death of any disorder of digestion are familiar to every pathologist. I have frequently observed them on the post-mortem table. They occur in many cases of lung and heart disease in which there has been a mechanical impediment to the circulation, and they are more often to be seen in the fundus or posterior part of the gastric wall.

[1] Habershon on Diseases of the Abdomen, chap. v., p. 131.

[2] Wilson Fox: Diseases of Stomach, p. 110.

The second fact is that the mammillated state of the mucous membrane attributed to a previous condition of chronic catarrh can be produced after death in the healthy stomach. According to Wilson Fox these mammillations consist of small irregular prominences somewhat like the granulations upon wounds. The appearance is believed by authorities on the subject (among whom are my father, Drs. Wilson Fox and Handfield Jones) to be caused by a post-mortem contraction of the muscular layer of the stomach, which, when it occurs to a less degree, simply throws the mucous membrane into rugæ or folds.

These various fallacies then have considerably detracted from the value of Louis and Andral's accounts. Still the fact remains that phthisis is one of the most common predisposing causes of morbid conditions of the stomach.

The various gastric affections which are now recognized in phthisical patients, and which are responsible for the symptom of vomiting, are as follows:

1. Acute and chronic catarrh of the stomach.
2. Atrophy of the coats of the stomach.
3. Ulceration of the stomach, non-tubercular or follicular, and rarely tubercular.

1. Acute and Chronic Catarrh of Stomach.

Acute catarrhal gastritis is liable to occur at the commencement of phthisis. Wilson Fox[1] has shown that it more commonly accompanies acute than chronic diseases, and among twenty-one cases in which it has occurred as an incident in the course of another disease, he has only recorded it twice in tuberculosis of lungs or other organs. A large proportion of the rest were acute disorders. At the same time he adds that the affection is not an uncommon accompaniment of the early stages of phthisis. Andral[2] describes cases of phthisis marked at their commencement by an attack of acute inflammation of the stomach before the symptoms of the lung disease were recognized. He considers that it was probably the primary cause of the attack of phthisis by the sympathetic irritation which it exercised on the lungs. He further describes cases in which it appeared after tubercles had manifested themselves in the lungs—that is, during the first period of phthisis.

My father[3] remarks of this affection of the stomach: "There is a predisposition to this form of disease in strumous subjects, but we must distinguish this affection from a sympathetic irritation of the stomach, produced in the early stage of disease of the lungs." Andral, however,

[1] Wilson Fox: Diseases of Stomach.
[2] Andral: Clinique Médicale, 1836.
[3] Habershon: Diseases of the Abdomen.

considers acute gastritis as a still more frequent complication of the later stages of phthisis, when it is usually followed by an aggravation of the lung disease. In other cases the primary affection appears to retrograde while the gastric inflammation is at its height, and the symptoms to be referred to the two organs appear to alternate in a striking manner.

Chronic gastritis, or chronic catarrh of the stomach, is more common than the acute disorder. Wilson Fox has tabulated the various diseases in the course of which it occurs, with the result that he finds it associated with phthisis with remarkable frequency. In sixteen cases out of thirty-one tubercular disease of the lungs was present, and he attributes these figures to the fact that all diseases which obstruct the venous circulation are liable to induce a chronic catarrhal condition of the stomach.

The *symptoms* of gastritis, acute and chronic, present considerable variety. They are more frequent in the later stages of the malady. I am unable, in the brief space at my disposal, to give a detailed account. In the acute form the attack usually comes on quickly, and is accompanied by considerable constitutional disturbance. The face is pale, the countenance anxious, the temperature usually raised two or three degrees. The urine is loaded with lithates and the bowels constipated. The complaint is of pain and oppression immediately after food is taken. The pain is often severe and continues until it is relieved by vomiting. This usually occurs shortly after the meal. The pain is referred to the epigastrium or to the præcordium, and may extend to the left scapular region, or more rarely to the left supra-clavicular fossa. The pain is associated with epigastric tenderness. The vomit consists of unaltered food, but if incessant it may become bilious in character and mixed with mucus. The appetite is generally lost, and thirst is frequently a prominent symptom. The whole attack may subside in a few days, or the acute stage give place to the symptoms of the more chronic affection.

Chronic gastritis, owing to the prostration and exhaustion to which it leads, has a serious effect in accelerating the disease in the lungs. The patient has a sallow or cachectic appearance. The appetite is poor, and in advanced disease completely lost. There may be little or no pyrexia, and the symptoms of pain and vomiting may be replaced by those of a flatulent dyspepsia. Every gradation may be observed between severe pain varying in position as above described and followed by vomiting, and merely a weight and feeling of distention and suffocation after a meal, accompanied by nausea and flatulence. A bitter or acid pyrosis may also take the place of vomiting. The vomiting is noticed within an hour after the ingestion of food, and consists of altered food or of bile. Mucus, especially in the more chronic forms, may be present in large quantities, and I prefer to consider the excess of secretion of mucus in this as in

chronic gastritis from other causes, not as a distinct form of the disease, but as an evidence of prolonged irritation and engorgement of the gastric as of other mucous membranes. The tongue, which is furred and indented at the edge in the acute stage, becomes more red and irritable looking as the disease advances. The tip and edges are raw, and in late stages the whole organ may be entirely denuded of epithelium.

If it continues for a long period the inflammation of the gastric mucous membrane tends to cause an atonic condition of the gastric walls, which terminates in dilatation or leads to atrophy of the secreting glands of the organ.

The appearances after death I have already alluded to. Cases of acute simple gastritis seldom come to the post-mortem room, and I cannot speak from my own experience of any characteristic sign. I have quoted authorities to show that the presence or absence of vascularity is by no means a safe criterion. More certain signs of acute catarrh are said to be a softening and swelling with some opacity of mucous membrane. The submucous tissue is, according to Wilson Fox,[1] sometimes infiltrated with inflammatory products, and the solitary glands enlarged and prominent, especially in the pyloric region. Follicular ulcers (small cup-shaped depressions) are frequently observed, and superficial erosions of the internal coat.

Chronic catarrh, as observed post-mortem in phthisis, leaves more certain changes. The altération of color is more marked, the mucous membrane presenting more evidences of hyperæmia than in the acute form. Changes of color are more frequent in the pyloric region, an ash-gray pigmentation Wilson Fox considers to be the most characteristic. He also states that hemorrhages, if due to previous catarrh, are capillary or punctiform. Thickening and induration of the mucous and submucous tissues are sometimes met with, and in some cases an appearance somewhat similar to the mammillation of Louis, which some authorities agree can occasionally be produced by local hypertrophy, around the secreting follicles.

2. Atrophy of the Mucous Coat of the Stomach.

At the close of phthisis it is not uncommon to find a condition attributed to an atrophy of the gastric mucosa with its glandular structures. It is associated with profound exhaustion of the patient, complete loss of appetite, and usually with extreme anæmia. Gradual in its onset, in some instances it is preceded by dyspeptic symptoms and increasing distaste for food, the tongue is clean, and there is very little pain on vomiting; in others there is evidence of dilatation of the stomach. Food

[1] Wilson Fox: Diseases of the Stomach.

leads to distention and a feeling of oppression, and finally epigastric pain, while the imperfect digestion results in fermentative changes, with excessive eructation, nausea, and more or less frequent vomiting. The tongue is often red and dry, or even denuded of epithelium. On the the other hand, the symptoms of atrophy may follow, and in fact be the final stage of a chronic gastritis, and such cases are to be distinguished in their causation from the above class, which may be considered as instances of a primary mucous atrophy—a true gastric phthisis. Sir Thomas Watson refers to this condition as follows: "When in phthisis these symptoms (nausea and vomiting) last long and are accompanied by pain and tenderness of the epigastrium, they denote almost always a thinned and softened condition of the mucous membrane of the stomach." Except in phthisis, and as an affection secondary to prolonged gastric inflammation or irritation (as in gastric ulcer), atrophy of the mucosa is a rare affection. Probably, from senile change and from conditions of asthenia, some of the gastric follicles waste and lose their functions, but it is not common to find an atrophy so universal as to destroy life by inanition or practical starvation of the patient. No doubt in phthisis the gastric wall shares in the general loss of nutrition and the emaciation of the patient, whereby a condition of muscular atony is the result, for the stomach is often found to be dilated and all its coats attenuated. An important part in the causation of atrophy is, however, to be found in the perversion of nutrition of the individual cells. A condition of fatty change induced by the imperfect process of oxidation in the blood and tissues is frequently seen, the secreting cells being found to be disorganized and loaded with fatty granules and secretion reduced to a minimum.

The mucous membrane of an atrophied stomach presents none of the appearances of inflammation. The internal surface is pale, and the membrane reduced to a thin pellicle. The muscular and submucous coats are often thinned, while the muscular fibres are pale and the striation for the most part absent.

A full description of the microscopic changes will be found in the writings of Handfield Jones, Fenwick, Wilson Fox, and my father, and more recently in the papers of Professor Ewald, in the Sydenham Society's volumes, 1892.

In some of the cases the gastric or dyspeptic glands are so disorganized that their structure is lost, and only a few cellular and nuclear elements are to be seen; in others the glands are devoid of secreting epithelium and cysts may be developed. While in the form of atrophy secondary to gastritis, the destruction of the mucosa is often very great, and the underlying muscular and submucous coats are thickened by fibroid change.

3. Ulceration of the Stomach—Tubercular and Non-tubercular.

Those authors who maintain the virulent and infective character of the tubercular sputum have attempted to show that tubercular ulcers can be produced by direct inoculation, and that this is the cause of the numerous tubercular ulcerations in the small intestine and colon of phthisical patients.

Klebs (Anat. Path., 1876) has affirmed this, and Parrot has asserted that he produced tubercle in the intestines of animals by making them swallow tubercular sputum. It is a remarkable fact, and mitigates seriously against their views, that tubercle of the stomach is an exceedingly rare affection.

Andral only found it in two cases. Barthez and Rilliet, in their statistics in children, found this lesion in twenty-one cases out of one hundred and forty-one cases of tubercle of the alimentary canal. They are the only authorities who find it frequent. Professor Parrot has only observed it once out of numerous autopsies. Wilson Fox has met with one case, but the tubercles commenced in the peritoneum and ulcerated through into the stomach, causing perforation. Bignon has recorded one case in which perforation occurred in the site of a tubercular ulcer, attended by copious hæmatemesis. Professor Ewald,[1] of Berlin, further mentions several other observers who have recorded one or two cases. Wilson Fox does not attribute to the affection any special symptoms, though in a few of the reported cases vomiting has been said to be present. Of *non-tubercular* cases the *follicular* ulcerations have been mentioned as an accompaniment of chronic gastritis. It is suggested[2] that these minute ulcers situated at the mouths of the follicles are due in some measure to the presence of irritating secretions, though probably in part degenerative in character, and occurring shortly before death. Others (as Fenwick) attribute them in part to post-mortem gastric solution. *Simple ulcer* of the stomach occurs as a coincident affection in phthiscal patients. It has been stated that phthisis predisposes to the formation of ulcer by the tendency to stasis and obstruction of the circulation, and so to the production of an embolus or thrombus;[3] but the fact that the proportion of cases of gastric ulcer is no larger in phthisis than in other diseases appears to negative this view.

Brinton[4] affirms that in several hundred cases of simple ulcer of the stomach a proportion of nineteen to twenty per hundred also suffered

[1] Ewald: Loc. cit.
[2] Brinton: Diseases of the Stomach, 1859, p. 182.
[3] Fagge: Principles and Practice of Medicine (on "Virchow's embolic theory").
[4] Habershon: Diseases of the Abdomen; fourth ed., p. 166.

from pulmonary consumption; but he asserts that about the same average of tubercular cases exists in cancer of the stomach.

From the records of two hundred cases of gastric ulcer (simple) derived from my father's private case books I can only find *three* in whom signs of tubercle of the lungs were present.

IV. Central Vomiting Due to the Irritation of Tubercle at the Base of the Brain (Tubercular Meningitis).

All the preceding forms of vomiting in a tubercular subject, with the exception, perhaps, of some cases of so-called mechanical vomiting, are reflex in character.

The cases that I have now briefly to describe are due to a direct irritation of the medullary centre, from the deposit of tubercles in its neighborhood.

The history and literature of tubercular meningitis has been fully given by Barthez and Rilliet in their "Maladies des Enfants." Even the most ancient authors appear to have noted the existence of this affection; but the earliest complete description is found in a remarkable treatise by Robert Whytt, in 1768, under the title of "Dropsy of the Brain." As far as the symptomatology is concerned, succeeding authors have not added much to his account. It was not, however, until many years later, that it was recognized that there was a distinct element at work to produce the local inflammatory appearances observed. According to the above authors, though Senn, in 1825, and Guersant, in 1827, noted that the meningitis was of a granular form and even that tubercles were present in other organs, it is placed to the credit of Papavoine that he first appreciated the tubercular nature of these granules.

In brief, the disease is characterized post-mortem by:

1. Inflammatory appearances, comprising congestion of the vessels of the pia mater (not always present) whereby the small vessels become injected and arborescent—an effusion of fluid œdema or lymph into the meshes of the pia mater, serous and more rarely purulent, with occasionally patches of semi-transparent, or gelatinous-looking lymph—a considerable excess of serous fluid in the ventricles of the brain which often become distended.

2. Softening of the cortical parts of the brain and of the basal ganglia beneath the lining membrane of the ventricles (the septum lucidum is a favorite seat of softening).

3. The presence of small, granular, tubercular foci (miliary tubercles) in the pia mater in the immediate neighborhood of the vessels, or in the vascular wall. These tubercles are milk-white or opalescent in color, or appear as translucent granules; or they may be of a yellow color. A common situation is along the course of the middle meningeal artery,

and extending into the Sylvian fissure and at the base around the vessels of the circle of Willis. They may be abundant in these situations, and on the surface of the cerebrum and in the longitudinal and other fissures, also upon the cerebellar surface, the crura cerebri, or even as minute granules upon the surface of the ependyma of the ventricles (the great basal ganglia). On the other hand, one or two tubercles only may be found.

4. Occasionally small masses of cheesy tubercle are found in the cortical layers of the cerebrum, or in other parts of the brain substance.

Tubercular meningitis occurs more frequently in children or young adults, though no age is exempt. Fagge[1] mentions that in the cases occurring at Guy's Hospital since 1854 sixty-five were in persons below the age of twenty (between the ages of six months and twenty years), and fifty-nine were above twenty years of age, but thirty-one of these occurred below the age of thirty, and only fourteen above forty-one years. Dr. Gee[2] shows, from statistics, that a large number of cases occur in children, and that the frequency appears to diminish after the age of eleven; but he considers the figures of statistics fallacious, for the reason that the disease is probably more common below the age of two years, as well as in adult life; because such cases are not always brought to hospital, and in the latter case are frequently not diagnosticated.

The disease may occur in rare cases as a primary affection, with or without premonitory symptoms, and without previous evidence of the presence of tuberculosis of other organs. Undoubted cases are recorded where no tubercle has been found post-mortem except in the membranes of the brain, and it is the opinion of most authorities that the affection is sometimes primary. Still, there is always the suspicion that a deposit of tubercle in bone or gland or other organ may have been overlooked. Far more commonly it is an event secondary to the deposit of tubercle elsewhere, and it occurs in two classes of cases: 1. When the tuberculosis is only slightly advanced or latent, evidencing itself by a failure of health for weeks or months previous to the onset of the disease, and possibly unrecognized. 2. As a coincident or metastatic affection occurring in the course of tubercular disease of lungs, larynx, abdomen, or of any organ, of scrofulous disease of bones, or during the course of an attack of acute miliary tuberculosis.

I have not space to enter fully into an account of the symptoms of the disease. The authorities whom I have quoted (Barthez and Rilliet), and Dr. Gee, in an admirable article in Reynolds' *System of Medicine*, describe these with great completeness. I concern myself chiefly with the diagnostic importance of the symptom of vomiting. In children

[1] Fagge's Principles and Practice of Medicine, vol. i.

[2] Gee: Article on "Tubercular Meningitis" in Reynolds' System of Medicine, vol. ii.

there is, as a rule, a prodromal period, perhaps, of some weeks or longer. This period is marked by debility, loss of flesh, pallor, and general slight disorder of functions. The appetite is lost, and there is languor or irritability. Drowsiness is a not infrequent precursor, and in infants is an important sign. In older children and adults an alteration in mental activity is early recognized. Those who are bright and quick become distracted, inattentive to lessons, and easily fatigued by work and intellectual pursuits. At night there is restlessness, frightful dreams, grinding of the teeth, or, in infants, screaming. Sooner or later the symptoms of the cerebral disease manifest themselves by vomiting. And in a child in whom such a change in temperament or mental condition has been noticed this symptom usually is the first to cause alarm. The vomiting is commonly after a meal, and consists of the food taken; but it may occur repeatedly, and is then often bilious in character. Vomiting seldom lasts more than a day or two, or at most for seven or eight days, but cases are recorded in which the symptom has lasted for several weeks before the invasion period. (Rilliet records a case in which vomiting occurred for two months before the attack.) Dr. Gee states that when vomiting has ceased for twenty-four hours it rarely, if ever, returns. With the vomiting headache is a prominent symptom, and other signs of brain irritation speedily ensue. The pulse shows abnormal fluctuation, is too frequent, or, perhaps, slow and irregular, the pupils are inactive, and the optic discs congested. Squint is common, and diplopia in the adult, and with all these there is a febrile condition (as a rule) and the patient becomes increasingly drowsy and vacant. Sooner or later, perhaps in a week, in typical cases, this irritative stage passes into that in which more definite signs of compression are marked. Paralytic symptoms of cranial or other nerves, convulsive seizures, and a state of unconsciousness, with dilated pupils, rapid, irregular or intermittent pulse, Cheyne-Stokes breathing, the hydrocephalic cry (in children) finally passing into complete coma, and terminating in death. The disease may present great varieties in the length of the stages, extending in some over two or three weeks; while in others, especially if the meningitis is part of a general tuberculosis, the whole course may be run in three or four days.

In adults the disease is more rapid. It commences, in many cases, with suddenness and without a prodromal period, and is therefore less easily recognized.

Vomiting is present, according to Dr. Gee, both early and in almost every case; while Dr. Fagge has seen several in whom no vomiting was present.

Headache, when the attack is gradual in its onset, is invariable, but in some cases the disease is ushered in by convulsive or paralytic symptoms, with delirium or partial unconsciousness.

Vomiting in these cases is dependent on the deposit of tubercle at the base; and hence, when the affection is limited to the convex surface of the brain, as in some of Dr. Gee's cases, it is to be expected that vomiting would be absent.

In many cases, where the meningitis supervenes during well-marked tubercular affection of other organs, the premonitory symptoms are either unnoticed or attributed to the general disease. It is in these that the occurrence of vomiting becomes an important diagnostic sign, especially if it occurs for the first time. Should the temperature, previously raised at night one or two degrees above the normal, become abnormally low, it is an additional reason for suspicion of the cerebral affection. I have observed this in several cases; but I do not know that it occurs in acute tuberculosis.

Barthez and Rilliet agree that all authors since the time of Robert Whytt are unanimous upon the value of vomiting as an indication of meningitis.

TREATMENT.—It is, perhaps, a truism to assert that the treatment of dyspepsia and of vomiting in phthisis should be directed toward subduing the progress of the lung disease. It is certain, however, that while local measures are necessary and even indispensable in some phases of the malady, they will eventually fail or have no permanent effect if the general treatment is neglected. As I have hinted, at the commencement of this article, this is especially the case in all the early stages of phthisis, or where gastric disorders have developed in a tubercular subject before any disease in the lungs could be detected. In cases of dyspepsia which seem unusually intractable it is a wise caution to examine the lungs, not on one occasion only, but repeatedly. An early clew may thus be gained as to the cause of the delicacy, and appropriate remedies applied. For such cases, as well as for all forms of atonic dyspepsia, it is unnecessary to insist on the great importance of pure and bracing air, and of residence on dry soil, to supplement the medicinal treatment. Nowadays, with our numerous convalescent homes, this is not impossible even in the out-patient practice of our large hospitals, and I have frequently had opportunities of putting my advice thus into practice. I cannot here enter into so large a subject as the general climatic or other treatment of phthisis. I desire rather to confine my few remarks to the remedial measures that I have found of value in the classes of vomiting which have been alluded to, where the symptom is of sufficient importance to need attention.

In all forms of vomiting certain general principles must be borne in mind.

Food of a bland and easily digestible kind should be ordered, and nothing irritating to any part of the mucous membrane of the alimentary tract should be allowed, either in the shape of food or drink—such,

for instance, as condiments, vinegar, acid drinks, or alcohol in any concentrated form.

When vomiting is frequent or severe, it is hopeless to attempt to treat the patient unless rest in a recumbent position is insisted upon. In such cases also, liquid nourishment is advisable.

This is obvious enough when the symptom is the result of gastritis, but it is equally applicable in the distressing vomiting that sometimes results from the cough.

The sympathetic vomiting from irritation of the pulmonary branches of the vagus is most intractable and difficult to deal with. I have, however, several times seen the vomiting subside as soon as the patient was kept in bed and put on liquid diet. Medicinal treatment alone without these precautions will invariably fail. The object should be to allay any irritability of stomach that may be present, and bismuth in the form of carbonate or subnitrate, with bicarbonate of soda and some sedative, such as opium or morphia, hydrocyanic acid, or bromide of potassium, should be given internally. Soda-water is a valuable sedative, and is suitable either alone or with milk.

It must be remembered that the tendency of vomiting, from this cause, is to cease after a time as the disease in the lungs progresses.

In the large class of cases described under the name of *mechanical vomiting*, it has been seen that there is frequently an irritability of throat or stomach present.

In the throat affection, soothing and slightly astringent gargles will do much to lessen the irritability, and this applies also to all forms of pharyngeal irritation, from simple catarrh to the more painful forms of ulceration of soft palate or pharynx. I have found great advantage ensue from the use of a sedative gargle of bromide of potassium and opium in combination. To these I frequently add a mild astringent such as borax. Some cases of longer duration are benefited by more powerful astringents, alum or tannin, but these should be combined with opium or some topical anodyne. For ulceration of the fauces a powder of iodoform, borax, and morphia dusted or blown upon the ulcerated surface once or twice daily will frequently give great relief. When the throat is not specially sensitive the difficulty of expelling the sputum often gives rise to exhausting efforts of coughing. This is not always easy to deal with.

The internal use of expectorant remedies combined with iodide of potassium (three to five grains are usually sufficient), or alkalies, will do much to aid in the expulsion of secretion. Opiates may be given in small doses when the amount of secretion is small and there is an undue irritability of the smaller bronchial tubes. If, as in some cases, there is any degree of spasm of the small bronchi, iodide of potassium and carbonate of ammonium in small doses are invaluable.

Care should be taken not to press ipecacuanha in any of its forms where the cardiac action is feeble. But all these internal remedies are sometimes unsuccessful, and I have then usually had recourse to inhalation. For moist inhaling I prefer a sedative alkaline inhalation, such as the *vapor coninæ* of the British Pharmacopœia, or better still a mixture of the succus conii with ammonia (ten drops of the liquor ammoniæ to the pint of hot water). When the cough is violent at night or in the early morning the dry inhalations are of more service from their greater convenience. Drops of the liquid remedy are placed upon the sponge or cotton wool in an oro-nasal respirator or in the form adopted by Coghill. Menthol or thymol dissolved in rectified spirit or spirit of chloroform may be used alone or in combination with compound tincture of benzoin and eucalyptus oil. A favorite prescription of mine is in use in the Royal Chest Hospital.

℞.—Ol. eucalypti . . . . . ℥ij.
Tinct. benzoin. comp. . . . . ℥iij.
Thymol. v. menthol. . . . . ℥j.
Spiriti chloroformi . . . . ad ℥j.
Ft. inhalatio.

Ten drops at a time, to be used on cotton wool in an oro-nasal respirator. Oil of peppermint alone is equally effective in lessening irritability, but is disagreeable to some on account of its smell.

By far the most obstinate cases to deal with are those in which there is excessive irritability of stomach. I do not here refer to cases of catarrhal gastritis. Vomiting follows shortly after a meal, and is often preceded by a sense of suffocation, without pain and with or without violent cough. (Sometimes the cough is very slight). Recourse may then be had to a drug which Sir George Paget first suggested to me and which I have frequently used with complete success. I refer to the use of liquor potassæ (five to ten minins for a dose), usually with calumba, with sometimes a few minims of Batteley's solution of opium or of laudanum added.

The success of this remedy is probably due to the fact that it counteracts the excessive acidity of stomach which is so frequently present, and which is itself sufficient to keep up a certain amount of irritability of the gastric mucous membrane. It is also of value where the bronchial secretion is viscid, from the property of alkalies of rendering such more fluid.

In a patient under my care at the time this paper was first written this was the only medicinal remedy which had the least effect in controlling the obstinate vomiting.

The well-known combination of creasote and opium is frequently of great benefit.

Finally, if all other remedies fail to control vomiting, a plan has been recommended by a French author[1] for which he claims absolute success. It has the disadvantage of being somewhat heroic. He injects hypodermatically one-sixth to one-fourth of a grain of morphine in the epigastric region, the patient being of course kept in bed or in the recumbent position. I have used this remedy in three cases with considerable success. In the case of C. B., a man aged about thirty-five years, food was rejected invariably from a few minutes to half an hour after it was taken. There was no evidence of gastric catarrh. The tongue was thinly furred, but not red or irritable in appearance. The throat was sensitive, but not inflamed. The pulmonary disease was confined to the left lung. No remedies such as those I have mentioned appeared to have the smallest effect in reducing the vomiting, and the man was becoming rapidly emaciated from his inability to take food. I therefore injected one-fourth of a grain of morphine in the epigastric region, with the result that for the whole of the following week there was no return of vomiting. At the beginning of the second week I again injected a smaller dose, one-sixth of a grain. The patient vomited two or three times in the course of the following few days.

In the two other cases to which I refer the effect was more temporary, but I was unable to keep either patients to their beds.

My limited experience of this remedy is, therefore, that it is well worthy of trial in cases that are are occasionally met with in which vomiting from this cause is exceedingly intractable.

In all cases of vomiting with the cough, the patient should be recommended not to exert himself after a meal, but to lie down for half an hour or an hour, while, as I have said, in extreme cases he should be confined to bed.

The treatment of pharyngeal irritability has been already alluded to and for the relief of the more severe forms of ulceration of epiglottis or larynx, which cause both cough and vomiting from the difficulty and pain in deglutition, I have little to say.

In this distressing affection palliatives are the only remedial agents. The powder referred to, of borax, iodoform, and morphine, affords great temporary relief, and the cocaine spray applied before a meal will often render a patient able to take food who would otherwise find it almost an impossibility. Several forms of apparatus have been devised to direct the spray upon the epiglottis or into the larynx, by the fixture of a small nozzle at right angles to the horizontal tube leading from the bottle holding the liquid. A solution of 1 or 2 per cent. of cocaine is the most suitable strength, but care should be taken not to apply the

[1] Constantin-C. Codrescu. Thèse de Paris, 1865.

remedy too frequently, as symptoms are very easily produced from absorption of the drug.

Much might be said on the treatment of gastric catarrh, but the space at my disposal is limited, and, rather than deal with it in a cursory manner, I would refer the reader to the excellent treatises of Brinton, Wilson Fox, and my father, who among many other authors have written upon the subject.

Suffice it to say, that absolute rest, suitable and unirritating forms of nourishment, fluid diet if necessary, and alkaline sedative remedies are the well-known principles on which such cases should be treated.

It is impossible to lay too much stress upon the importance of successfully coping with the various gastric disturbances that arise in the course of phthisis. The elements of success are assured when a correct diagnosis has been made as to the cause of the symptoms. Hence I have labored to define and classify these causes in the hope that my experience may be of help to those who, like myself, are daily brought in contact with one or other phase of this terrible and far-reaching scourge.

FIFTY-FOUR CASES OF MOLAR PREGNANCY.

By Theophilus Parvin, M.D.,
of Philadelphia.

The statistics here presented are of cases in which the product of conception presented those appearances which have given it the name of *Fleischmole, mola carnosa*, or flesh-mole. This application of the term mole, as well as its use, qualified by the word cystic, to what is generally spoken of as hydatidiform degeneration of the placenta, is not unobjectionable, and is less frequent than formerly. Nevertheless, flesh-mole or fleshy mole indicates so well the obvious appearances of the expelled mass in certain abortions that it may be properly retained.

Roederer (*Elementa Artis Obstetricæ*) thus defined a mole: "*Ovum deforme, in quo partes embryonis et secundarum distingui vix possunt, molam vocabimus.*" Dionis, under the head of *faux germe*, speaks of this "fleshy body" as having the form and solidity of a young turkey's gizzard, and again of its being the size of a small egg.

The first table following contains twenty-two cases from the records of the Munich Frauen-Klinik, kindly given me at Dr. Winckel's request by his assistant, Dr. Lamping. The second table includes twenty-seven cases obtained from the library of the College of Physicians, Philadelphia. After the tables five additional cases will be presented, one of them given me by Dr. Winckel when I was in Munich in August, 1891.

Cases of Molar Pregnancy. Table I.

No.	Name.	Age.	Number of labors and miscarriages.	Date of last menstruation.	Date of expulsion.	Previous health.	Hemorrhage.	Expulsion spontaneous.	Character of mass expelled.	Recovery.
1	Frau S.	32	5 normal labors.	Middle of November.	January 21.	Influenza with fever for eight days.	Eight days.	Spontaneous.	Death of embryo from disease of circulation.	Yes.
2	Maria J. unmarried.	22	Second pregnancy	October 20.	January 23.	Good.	Severe bleeding.	Spontaneous.	Chorion and circumflex decidua separated from the amnion.	Yes.
3	Frau St.	38	10 pregnancies: 3 living children; 3 dead-born; 3 miscarriages.	November 8.	February 1.	Light bleeding during pregnancy.	Severe bleeding.	Normal.	.....	Yes.
4	Frau S.	23	III-para. Normal labors.	November 2. to December 2	February 1.	End of December severe influenza.	Severe bleeding.	Normal.		
5	Frau Y.	23	I-para.	Middle of November.	February 28.	Good.	Moderately severe bleeding.	Spontaneous.		
6	Frau F.	32	II-para. Normal births.	December 2.	March 1.	Good.	4 days bleeding.	Spontaneous.		
7	Frau F.	34	13 labors; 1 abortion.	February 9.	April 26.	Good.	Severe bleeding during expuls'n	Spontaneous.	Hemorrhage into chorion	
8	Anna H. unmarried.	16	I-para.	February 7.	April 27.	Bleeding for several days.	.....	Spontaneous	Ovum inverted into posterior wall of decidua vera; hemorrhage into decidua-vera.	
9	Frau R.	35	IV-para. 1st and 2d normal; 3d, child dead-born.	Beginning of February.	May 14.	Good.	Trifling bleeding.	Spontaneous.		
10	Frau S.	26	IV-para Normal labors.	Middle of April.	July 4.	Good.	Slight.	Spontaneous.	Apoplexy of chorion.	Perfect.
11	Frau B.	33	XI-para. 9 births; 1 still-born child; 1 abortion.	End of April.	July 5.	Good.	Slight.	Spontaneous.	Hemorrhage under the amnion.	Perfect.
12	Frau R.	34	IV-para. 3 abortions; 1 labor at term.	Beginning of May.	July 19.	Always delicate.	Severe bleeding for two days.	Spontaneous.	Decidua reflexa and chorion torn.	Perfect.
13	Frau L.	30	VI-para. Normal births; except 5th; abortion.	End of July	Middle of October.	Heavy lifting caused abort'n	Severe.	Spontaneous.	Apoplexy of the membranes	Perfect.
14	Frau P.	30	IV-para. Normal births.	July 14.	October 13.	Good.	Severe.	Spontaneous.	Ovum intact; large part of decidua wanting; hemorrhage in the chorion.	Perfect.
15	Frau H.	36	V-para.	October.	Beginning of January.	Good.	Not severe.	Spontaneous.		
16	Frau R.	22	V-para. Normal births.	Middle of December.	February 24.	Good.	Slight.	Spontaneous.		
17	Frau B.	27	IV-para. Normal births.	October 25.	February 25.	Frequent hemorrhages.	No bleeding.	Spontaneous.		
18	Frau D.	?	IV-para. 2 normal; premature.	November 15	April 7.		Seventeen days colic.	Spontaneous.		
19	Frau X.	32	V-para. Normal births.	February 4.	April 26.	.....	Hemorrhage one day.	Spontaneous.		
20	Frau N (?)	24	VIII-para. 4 children; 3 abortions.	February 22	May 20.	Good.	Very severe bleeding.	Spontaneous.	Hemorrhage in chorion.	
21	Frau N (?)	37	XII-para. 1 premature; others normal.	Last of Feb'y	July 11.	Under unwise treatment.	Slight bleeding.	Spontaneous.	Superficially a series of ruptured vessels.	
22	Frau S.	22	X-para. Abortion in 2d pregnancy.	May 8.	July 27.	Severe vomiting in pregnancy.	Severe bleeding.	The ovum manually removed from os uteri.	Apoplexy of chorion and decidua reflexa.	

TABLE II.

No.	Name.	Age	Date of delivery.	Number of labors and miscarriages	Last menstruation.	Hemorrhage	Delivery: spontaneous manual, instrument'l	Former health	Character or condition of expelled mole.	Rec'v'ry	Accoucheur.	Where reported.
1	?	?	January, 1880	3 labors; 1 miscarriage six months previous (Aug 1885)	Spring, 1885.	Constant oozing since miscarriage.	Few hours after vigorous curetting of uterus.	Good up to date of miscarriage	Round, fleshy mass, with remains of amotic sac visible at lower portion. On section soft, spongy, suggestive of hypertrophied placental tissue. Microscopical examination failed to reveal remains of chorionic villi; tissue largely myxomatous.	Yes	Gillette.	Am. Journ. Obst., 1886, p. 403-5.
2	Mrs. A.	25	April 8, 1841	7 pregnancies. (3 of these had resulted in anomalous productions which were expelled at full term.	July, 1840.	Slight.	Spontaneous	Good up to 8th month.	Masses of putrid coagula of blood, very dark, very offensive, enveloped in a membranous sac, the whole being of a rounded form. Microscopically, consisted of a cellular structure, the cells inclosing a caseous matter.	Yes	John Grove.	Lancet, 1840-41, ii. 368-70.
3	Mrs. A.	32	June 12, 1878	3 labors.	January 14, 1878; continued flow since.	Profuse, daily for 5 months previous to delivery of mole.	9 hours after introduction of uterine sound.	Good to January 1878.	Ovoid mass, size 6 x 4 inches; placental tissue over the surface; uniformly hard and resisting to the touch. Tissue dense with central cavity less than three inches deep, containing no fluid.	Good but slow.	E. S. Dunster.	Mich. Med. News, Detroit, 1869.
4	?	26	Feb. 10, 1853	3 labors.	Feb., 1852.	Moderate for 8 or 9 mos.	12 hours after exhibition of powerful dose of cathartic medicine.	Good to May, 1852.	Mass size of fist; solid. Surface smooth, rounded, with remains of thin areolar membrane attached to it. Section presented a vascular surface composed of tough and organized lymph, containing bundles of delicate white fibro-cellular tissue.	Yes	Hutchinson.	Trans. Path. Soc., Lond.,, 1852-53, iv. 217.
5	?	41	1874	8 labors.	13 months before deliv. of mole. (History of fall at the 6th month.)	Considerable at time of delivery of mole.	Few hours after introduction of sound.	Good.	Thick cast of the interior of the uterus, with walls one-third inch in thickness. Corresponded exactly in size with the enlargement of the uterus.	Yes	Thomas More Madden.	Med. Press and Circ., March 18, 1874
6	Mrs. C.	24	Aug. 17, 1814	3 labors; 1 miscarriage.	4 months previous to discharge of mole.	Slight for week before delivery; profuse at time of delivery.	Spontaneous	Good.	Oblong fleshy cake, three inches in diameter, possessing every characteristic of a natural placenta, and having a membranous bag connected with it. Whole surface of mass covered with tumors in clusters, livid fleshy-brown in color, containing coagulated blood.	Yes	M. Lemon.	Edinb. Med. and Surg. Journ., 1815, xi. 96-100.
7	?	?	Oct. 3, 1869	Miscarriage at 4 months, July 8, 1869; placenta retained.	7 months previous to delivery of mole.	?	Spontaneous	?	Globular mass, shape of the cavity of the womb. On section, composed of white fibrous tissue with a vascular stroma.	Yes	Newman.	N. Y. Med. Rec., Dec. 1, 1869.
8	?	?	June	2 labors.	10 or 11 mos.	Profuse for	Manual.	?	Organized body weighing 6 or 8 ounces; in	Yes	Jos. Parrish.	New Jersey Med. Reporter, June,

8	?	?	June, 1851, four weeks after birth of last child.	2 labors.	10 or 11 mos. previous to delivery of mole.	Profuse for two weeks before delivery.	Manual.	?	Organized body weighing 6 or 8 ounces; in color and consistence resembling liver upon its upper surface, with white tendinous cords attached to its inner portion. Inner surface ragged, and attached to it were numerous clusters of little granular bodies resembling the roe of fish, but exceedingly tenacious. The difference between the clusters of the organized substance and hydatids consisted mainly in their solid, tough, granular feel, rolling between the fingers like small shot. The portion of the mass from which they were suspended was fleshy and in some parts tendinous.	Yes	Jos. Parrish.	New Jersey Med. Reporter, June, 1851.
9	Mme. X.	21	Aug. 27, 1863	1 labor two days previous to discharge of mole.	8 months previous.	None.	Spontaneous	Good.	Mass, of a dirty-white, yellowish color, dense, rough on the surface, slightly vascular, and very fatty. Its volume almost equalled that of the two fists.	Yes	Pichon.	Gaz. d. Hôp., Paris, 1865, xxvii. 109.
10	Negress	35	June 10, 1859	5 labors.	Jan., 1859.	Considerable at time of delivery of mole.	Spontaneous	Delicate health since birth of last child 3 years before.	Mass of hetrogeneous matter consisting of lumps of fatty material of irregular size inclosed in a delicate pellicle or fibrous membrane; in the fat was a number of lumps of various shapes and sizes, from that of a walnut down, some resembling clotted blood, and others muscle tissue. The entire mass filled a gallon measure.	Yes	R. Quinney.	New Orleans Med. and Surg Journ., Sept., 1859.
11	Mrs. W.	30	March 20, 1878	2 labors; no miscarriages	One year previous.	Considerable at time of delivery of mole. Dark yellowish discharge with foul odor after 4th month till time of delivery.	Spontaneous	?	Mass size of fist. "Presented the usual appearance belonging to the carneous mole."	Yes	Underhill.	Am. Journ. Obst., March, 1879.
12	Mrs. M.	34	Dec. 24, 1884	5 labors.	March, 1884	Since June, 1884, continuous brownish, watery discharge, of bad odor, and occasionally bloody. None at time of delivery.	Spontaneous	Good.	Mass size of full-term placenta; heavy, dense, with a hard fibrous feel. Membranes intact. Central cavity containing about half a pint of dirty-colored liquor amnii. At the bottom of the cavity were a number of large varicose veins.	Good	Schoolfield.	Cin Lancet and Clinic, 1885, xv. 98.

No.	Name.	Age	Date of delivery.	Number of labors and miscarriages	Last menstruation.	Hemorrhage	Delivery: spontaneous manual, instrument'l	Former health.	Character or condition of expelled mole.	Recov'ry	Accoucheur.	Where reported.
13	?	?	?	?	?	Very profuse at time of delivery.	Instrumental—blunt hook and curette.	?	Mass resembling placental tissue, firmly adherent to uterine fundus.	Yes	L. Wolff and Dr. A. Reported by Rosenthal.	Journ. Amer. Med. Assoc., 1888, 255–262.
14	German woman	?	?	? (History of several similar gestations.)	2 or 3 mos. prior to delivery of mole.	Profuse at time of delivery.	Spontaneous	Good.	?	Yes	Ditto.	Ditto.
15	German woman	30	?	?	?	Profuse at time of delivery.	Instrumental—Beecher's placental forceps	?	Round soft mass, firmly adherent to uterine walls. Pedicular portion had undergone distinct fatty degeneration.	Yes	Ditto.	Ditto.
16	Mrs. C. Italian.	?	?	A number of miscarriages	?	Profuse at time of delivery.	Instrumental—Beecher's forceps with blunt curette.	?	?	Yes	Ditto.	Ditto.
17	Mrs N.	35	?	Sterile.	10 weeks prior to delivery of mole.	Profuse at time of delivery.	Spontaneous after tamponnage and use of ergot.	?	Mass size of an orange, round and somewhat firm; surface irregular and covered with clotted blood. Section showed a compact texture with a small central cavity lined by serous membrane and containing a small quantity of fluid.	Rapid	E. Rosenthal.	Ditto.
18	Hungarian woman.	40	?	?	?	Slight at time of delivery.	Spontaneous	Good.	Large fleshy mass about the size of a fœtal head; walls about three inches thick containing small cavities filled with blood. Central cavity lined with serous membrane containing some fluid.	Yes	Ditto.	Ditto.
19	Mrs. H. Polish woman.	38	?	5 labors; 3 miscarriages	Over a year before delivery of mole.	Constant dribbling for 4 mos. prior to delivery.	Instrumental—placental forceps, curette, blunt hook.	?	Mass composed of very dense fibrous tissue with here and there small pellicles of calcareous deposits.	Good	Ditto.	Ditto.
20	Mrs. B. F.	33	?	4 miscarriages, then a pair of living twins. One year later gave premature birth to 7	?	None.	Spontaneous	?	Large fleshy mass, size of adult head, pliable, easily moulded, with small central cavity containing a small amount of fluid.	Good	Ditto.	Ditto.

				mos. twins; one year later gave birth to full term child and present mole.								
21	Mrs H.	45	May 2, 1848	?	Menstruat'n ceased for 7 months, and then reappeared, tho' irregular as to time and quantity. 6 years later was delivered of a living child. Menses then resumed their irregular character until delivery of mole fifteen years after original trouble.	For 6 mos. prior to delivery of mole had a constant discharge of sanious and purulent fluid, together with small fragments of ossific matter size of finger nail to mere powder; and frequently irregular small, fleshy masses were passed, some weighing over an ounce.	Manual.	?	Homogeneous conglobate mass, weighing about 4½ pounds, of a yellowish color, resembling healthy liver in consistence, but much more elastic, and covered externally with scales of ossific matter. Mass was 10 inches long, 4 inches wide, 2 to 3 inches thick; wedge-shaped. Nearly a gallon of semi-purulent fluid, extremely offensive, escaped after the delivery of the mass.	Slow	R. R. Stone.	Northwest'rn Med. and Surg. Journ. Chicago, Aug. and Sept. 1848.
22	Mrs S.	30	Feb. 6, 1883	3 labors.	Not menstruated since birth of last child 5 months before.	Slight since January 19, 1883. Considerable for few days before delivery of mole.	Spontaneous after administration of ergot.	?	Pear-shaped body resembling placenta tissue.	Good	O. V. Thayer.	Pacific Med. and Surg Journ., May, 1883.
23	Mrs. F.	25	April 22, 1890	?	July, 1889.	On Dec. 25, 1889, hemorrhage of 1 or 2 ounces repeated at irregular intervals for 3 weeks. Slight at time of delivery of mole.	Spontaneous	Good.	Mass the size of a large fig resembling placental tissue.	Yes	H. F. Vickney	Boston Med. and Surg. Journ., Oct. 30, 1890

No.	Name.	Age	Date of delivery.	Number of labors and miscarriages	Last menstruation.	Hemorrhage	Delivery: spontaneous manual, instrument'l	Former health.	Character or condition of expelled mole.	Re-cov'ry	Accoucheur.	Where reported.
24	?	?	Oct. 12, 1877	7 labors. Three days after discharge of mole a highly decomposed 4½ mos. fœtus was discharged; placenta, adherent and rotten, was removed by hand.	June 1, 1877.	Profuse bloody discharge, thin, black, and offensive, from Sept. 20	Spontaneous	Good	Dense mass, size of hand, two fingers thick; covered with serous membrane; adherent to the side of the uterus for a space the size of a dollar. On section, the color and texture resembled liver. The mass was of the form and appearance of liver.	Good	Caspari.	Deutsche med. Woch., Berlin, 1878, iv. 30.
25	C. R.	37	June 6, 1846	10 pregnancies. (Each of these ten pregnancies resulted in a well developed fœtus of 5–7 mos., accompanied with a mole as in present instance, attended with severe hemorrhage).	?	Mild for some time before delivery of mole; severe at time of delivery.	Manual.	?	Mass weighing 12 ounces. One and a half hours later a six or seven months fœtus together with the placenta was discharged.	Yes	Majer.	Med. Corr.-Blatt. d Wurtemberg, arztl.ver. Stutt., 1847, xvii. 304.
26	Frau S.	?	?	?	?	From birth of child 18 days before until delivery of mole.	Spontaneous	?	Long, round, fleshy mass, size of a pigeon, weighing 1½ pounds. Outer surface covered with sero-fibrinous membrane to which fatty particles were adherent. Section revealed a fasciculated mesh	Yes	J. Kraus.	Allg. Wien. Med. Zeitg., 1866, xi. 273.
27	?	?	1866	8 labors.	7 months before delivery of mole.	Slight from middle of second month up to delivery of mole.	Manual, 46 hours after administration of ergot and insert'n of elastic catheter. Living child 27–30 weeks old, born at same time, but died in two days.	?	Mass size of an apple, presenting the ordinary characteristics of a fleshy mole.	Good	O. v. Forunque.	Wien. med. Presse, 1866, vii. 233–235

Desirous of knowing whether endometritis had any obvious part in the etiology of molar pregnancy, I had one of the headings in the tables relating to it, but as in not a single instance was any reference made to the disease, I have omitted this heading in the published tables.

For the following case I am indebted to Dr. Charles L. Spivak:[1]

The patient was twenty years of age; ten months married, and the last menstruation was three months after. During the seven months there was some abdominal enlargement and no threatening of miscarriage, except there was twice slight discharge of blood. In the examination a uterine sound was introduced, but immediately withdrawn when found to have penetrated five inches. Six hours after the introduction of the sound uterine contractions began, and thirty-five hours after their commencing a fleshy mole the size of the fist was removed with placental forceps.

The next two cases illustrate the fact that there may be a plural conception in some cases of molar pregnancy:

Frau ——, had two normal pregnancies; then, after four months and a half absence of menstruation, expelled an ovum corresponding to the third month, and, three days after, a flesh-mole the size of a walnut; it had an amnial sac containing only fluid.[2]

Frau ——; seven pregnancies—one with twins—and then the eighth pregnancy began, in October; labor occurred in July. First there was a mole the size of two fists expelled—mola carnosa—and then a traubenmole weighing five pounds. A year afterward this woman gave birth to a healthy child at term.[3]

It is an interesting fact, which may be stated in this connection, that La Motte (*Traité des Accouchemens*, Observation XIV.) narrates a case in which, after the removal of one mole, the hemorrhage not ceasing, he removed a second, and then the flow stopped. This writer, whose reports of cases are always interesting and often very instructive, gave other illustrations of molar pregnancy, stating that one of the characteristics of such pregnancy was an increase of size much greater than corresponded with the period of pregnancy; thus, a woman at two and a half months would be as large as she ought to be at five months of normal pregnancy. Nevertheless, notwithstanding the usual accuracy of this great obstetrician's observations, such rapid abdominal enlargement is characteristic of an "hydatid," rather than of a "fleshy" molar pregnancy.

The following is the report of a case under Dr. Winckel's care and given me by him:

Frau F. came under my care January 5, 1885. She was twenty-five years old, and married seven months; she suffered from dysmenorrhœa,

[1] Personal communication.

[2] Monat. f. Geburtskunde und Frauenkrankheiten, Berlin, 1859.

[3] Berlin. klin. Wochenschr., 1873.

with scanty flow. Treatment: Infusion of hyoscyamus leaves, and Lugol's solution locally applied. May 18, 1885, the flow was more abundant and without pain. High altitude, Rigi, and cold bathing. July, 1885, conceived. First vomiting, August 4th. Menses absent in August and September. October 28th, threatened miscarriage. November and December, the uterus ceased to increase in size; condition of patient good. January 9th, seventy-three days after the threatened abortion—that is, at the end of six months of pregnancy—profuse discharge of blood, and January 10th—that is, on the one hundred and sixty-eighth day—there was expelled a mass the size of a hen's egg, in which the embryo is not found; the amnial liquor is cloudy, and the chorion contains small apoplectic areas. Puerperium normal. Then albuminate of iron was given. She conceived again in August, 1886; was constantly in bed from September 9th to the 30th and again from October 8th to November 30th. She went to term, and was delivered, May 3d, with forceps, on account of danger to the child. She has been perfectly well, but has not again become pregnant.

My own case is briefly as follows:

Mrs. ——, about thirty years of age, has given birth to three children and has had two miscarriages. When she consulted me she supposed herself to have completed six months of pregnancy; was confident there was abdominal enlargement, and believed that she had felt fœtal movements. In the third month of pregnancy she was threatened with miscarriage first, and subsequently the danger seemed so imminent that at one time she remained in bed for five weeks, and used occasionally opium suppositories. Examining the uterus I found it about twice the size of the unimpregnated organ, but its development did not approximate that of six months. I assured her that either she was not pregnant at all or else the embryo had perished some time before. I suggested to her instead of confinement to the house, still less to the bed, a ride on horseback. She took a ride the following day—in a carriage, however—and at night I was sent for, and found her suffering with regular uterine contractions and some flow of blood, by no means great. In two hours after my arrival a mole nearly the size of the palm of my hand was expelled; this mass, when placed with its uterine surface upon a plate, presented an elevation not dissimilar to that of a watch-crystal upon the face of the watch, and was caused by the amnion raised by between one and two tablespoonfuls of liquor, which was only slightly cloudy, and contained no trace of an embryo. Her convalescence was satisfactory.

The brief history enforces this truth, that when in a pregnancy the uterus ceases to enlarge, its size in a given time being much less than normal, it is unwise to endeavor to avert or to postpone a miscarriage.

In examining these tables one is struck by the fact that the first is rarely a molar pregnancy; there were only four primigravidæ in fifty-four; some of the women had ten, one eleven, another twelve previous pregnancies.

Endometritis has been suggested as one of the causes of molar pregnancy. Thus, a recent writer,[1] reporting some cases occurring in his

[1] Annals of Gynecology and Pædiatrics, May, 1891.

practice, observes: "I am inclined to think that a disease of the uterus, especially of the endometrium, plays an important part in the causation in many cases, and may be aided by a debilitated condition of the system." But this hypothesis finds no support in these reports, for endometritis is not mentioned as being present in a single case; moreover, several women are stated to have had a normal soon following the abnormal pregancy. Indeed, so far as careful examination of these moles testifies, the condition of the chorion[1] has more to do with their production than that of the decidua. It seems to me, however, it would be a mistake to reject disease of the endometrium as a possible cause, and this opinion is confirmed by a recent case under my care, in which such disease was present both previous to the conception and after the expulsion of the mole. Indeed, so strongly am I impressed with this possible etiology in some cases, that if recurrence of this accident was observed, the recurrence being after a brief interval, my belief is that careful examination would discover an endometritis, the appropriate treatment of which might avert a succeeding abnormal pregnancy.

Several of the histories show that Nature is ready, upon slight provocation, to cast off the abnormal product; the uterus is, as it were, in a condition of unstable equilibrium, and tampon, catharsis, or the gentle use of the uterine sound may disturb that equilibrium, exciting its activity.

If uterine action has begun, is interference by active means advisable? When we remember that in twenty-three cases collected in Munich the issue was unassisted—save in one case, in which the hand was employed to remove the detached mass from the os uteri—we may doubt whether placental forceps and curettes will be required, save in the rarest cases. Daily antiseptic vaginal injections may be advisable if the process of detachment and expulsion is slow, and the tampon and ergot if there be much hemorrhage.

So far as can be established by these statistics, the average duration of a molar pregnancy is a little more than four months; such pregnancy may last only two months or extend to twelve. It is probable that in many cases opium, rest, and similar means were employed to prevent miscarriage, and thus this occurrence was often delayed. Therefore, it may be regarded as almost certain that the average duration of this abnormal pregnancy should be stated as between three and four months.

[1] The same fact, too, is shown in a case reported by Dr. Edis (British Medical Journal, Nov. 2, 1889); it is stated that the specimen showed there had been "hemorrhage into the chorion."

TREATMENT OF SACCULATED AORTIC ANEURISM BY ELECTROLYSIS THROUGH INTRODUCED WIRE.[1]

Report of a Case.

By D. D. Stewart, M.D.,
clinical lecturer on medicine at the jefferson medical college.

The therapy commonly adopted for the cure of aortic aneurism, whether of the arch or the descending portion, usually offers so little promise of success, that any method suggested to supplement or substitute this, if attended with little risk to the patient and supported by the slightest clinical evidence, merits careful consideration. The frequent utter inutility of medical treatment in cases of aneurism which, from their situation or character, are insusceptible of extinction by deligation or by compression, necessitates an earnest search for another method.

As the cure of aneurism can only result through obliteration of the sac cavity by the formation therein of firm thrombi, which in process of time undergo organization with contraction of the sac wall, so all plans of treatment suggested have as their basis the production of organizable clot. The ideal method of promoting this would be that of introducing into the sac a harmless substance that would act by virtue of its vital or chemical properties; such a substance has not yet been found among the medicinal hæmostatics. Experiments made by the late Dr. Wooldridge[2] tend to indicate that it may exist in lecithin or in tissue fibrinogen—that the fibrin factors of the blood may, under skilful manipulation, be so modified that these can be introduced without risk of the coagulum so induced spreading beyond the sac boundaries into the vessel. As yet this hope has not been realized.

Multiple galvano-puncture, with the use of strong currents, the anode the active pole, the cathode externally—in brief, the process conducted in a manner conducive to the best results with least risk, if good results were possible—has, beyond doubt, proved a failure in the therapy of aneurism.[3] Although the method is practically devoid of danger when

[1] Read before the College of Physicians of Philadelphia, March 2, 1892.

[2] See paper by Powell, "On the Diagnosis and Treatment of Aneurism of the Aorta," Lancet, January 4, 1890.

[3] Practised as advocated in text-books on electricity the treatment is useless indeed. A recent work—Liebig and Rohé's—recommends a current-strength of but twenty to thirty milliampères, and this applied for but ten minutes. The inter-polar resistance is so great with one electrode externally, that an electrolytic action to any purpose necessitates a current strength, and the duration of its application, much in excess of this. Fifty milliampères are none too great nor an hour too long, if permanent results are to be hoped for. No greater risk attends the application of a strong current and a long session, than a weaker current and a short session, provided the needles are properly

carefully carried out, it is also, it must be added, apparently practically devoid of benefit; for though firm coagula are perhaps often induced, they are of such small dimensions, and offer so little obstruction to the blood-current, that their dissolution rather than their accretion and organization usually quickly results. The slight amelioration in symptoms, though promptly occurring, is of most ephemeral duration. Occasionally a "cure" is reported, yet this is so exceptional that the method must now be looked upon as scarce worthy of further trial.[1]

It must be briefly inquired, if the method originated and first practiced by Moore, of London—that of permanent introduction of filiform material into the sac which acts merely mechanically, by offering multiple surfaces for clotting and by impeding the blood stream, permitting the latter to whip itself about the former—is more promising than that of galvano-puncture. That it is theoretically so there is no doubt, the two factors most important in cure being here furnished. It is not surprising, therefore, that since Moore, in 1864, attempted, by the method which has since been called by his name, to delay the fatal issue in a hopeless case of thoracic aortic aneurism, that the possibilities this treatment suggests should have caused it to be viewed with favor. It is, on the other hand, more curious that an interval of seven years should have been permitted to elapse before the method was tried a second time, possessing the theoretical advantages that it does. The cause probably lay in the subsequent unfortunate result in Moore's case—inflammation of the sac and pyæmia—one that in those days seemed inherent in the operation, but which was, in truth, rather due to the bad technique—faulty in the excessive amount of wire used,[2] with which were also probably introduced septic germs.

Of the twelve recorded cases in which wire was inserted,[3] without the

insulated. See my own case, in which a current of seventy milliampères was passed through two needles and two and a half feet of wire for an hour entirely without ill result.

[1] As to these reported *cures*, are they permanent? Unfortunately too few trouble themselves to obtain information as to later developments in rare cases of "cure" in other affections beside aneurism. The report is too often made *ad captandum*—the wonder excited is the reward desired.

[2] Twenty-six yards of fine iron wire were inserted—sufficient to originate much local disturbance. The wire was soft and bent in all directions (see remarks by Holmes and Hulke: Cayley's paper on a case treated with wire—Lancet, February 27, 1886). The aneurism was very large and seemed on the point of bursting through the skin or into the pericardium. Rapid coagulation in the sac occurred and temporary arrest of pulsation. Death resulted on the fifth day. (Med.-Chir. Trans., xlvii. p. 129.)

Omitting those in which watch-springs were used, the method of Bacilli, which has nothing to recommend it, either in theory or result, over the employment of ordinary wire. The elasticity of watch-springs necessarily interferes with subsequent contraction of the sac and its contents, without which an absolute cure cannot result. Their brittleness also renders fracture likely during the process of sac-contraction. The walls of the aneurism are then endangered from contact with the sharp pieces.

conjoint employment of electrolysis, all were apparently in a more or less hopeless condition prior to operation. Yet, notwithstanding this, as regards clot-formation, reduction in the bulk of the sac, and its final obliteration, if such may be termed a cure, it would appear that two recoveries resulted, and the condition of several other of the cases was temporarily improved. In Loreta's case[1] an abdominal aneurism, the size of a fœtal head at term contracted to the dimensions of a walnut, with obliteration of the sac cavity, by the seventieth day after the introduction of two yards of silvered copper wire. Death resulted subsequently from rupture of the aorta below the sac. In Morse's[2] case it is stated that eight weeks after the insertion of one and a half yards of one-half millimetre silver-plated copper wire into the sac of an abdominal aneurism the size of two fists, all indications of aneurism had disappeared, a hard nodule replacing the pulsating tumor. The patient remained well. In Cayley's case[3] of rapidly increasing thoracic aortic aneurism on the verge of rupture, forty feet of steel wire caused complete consolidation of that portion of the sac pointing externally, without constitutional disturbance or local pain. Two months later nearly thirty-five additional feet of wire were passed into the intra-thoracic portion of the aneurism, which now showed signs of rapid increase. Death resulted from dyspnœa from the tracheal pressure, without any change occurring in the symptoms or physical signs. The size and connections of the sac were stated by Cayley to have rendered the second operation ineffectual. That part of the sac in which the wire was first introduced was found to have undergone complete solidification. In the cases of Domville,[4] Murray,[5] Pringle (and Morris),[6] Lange,[7] and Ransohoff,[8] in which death followed the operation in a short time, the necropsies showed undoubted evidence of benefit having resulted from the introduction of wire. In Hulke's case[9] (thirty-three feet of wire) no *intra-vitam* or *post-mortem* change attributable to the use of wire could be noted. In that of White and Gould, in which thirty-two feet of steel wire were introduced, harm rather than benefit resulted—due, it was thought probable, to the use of an excessive amount of wire, and to too firm pressure being subsequently applied to the sac.

Closely following the second and third operation with wire, came a

[1] British Medical Journal, 1885.

[2] Pacific Medical and Surgical Journal, February, 1887, abstracted in the Medical News, March 5, 1887. This operation was performed after Loreta's method, the aneurism being exposed through an abdominal section.

[3] Lancet, February 27, 1886.

[4] Stimson's Reference Handbook, vol. i.

[5] British Medical Journal, 1872, vol. i.

[6] Lancet, April 19, 1887.

[7] British Medical Journal, November 20, 1886.

[8] Medical News, May 29, 1886.

[9] Lancet, April 19, 1887.

modification of Moore's method by Levis—that of the introduction of horsehair instead of wire. Subsequently catgut was used by Murray, of Newcastle, and Florence silk by Schrötter, of Vienna. It was supposed that with these substances a nidus for deposit of fibrin would be offered with less risk of subsequent irritation, and with a better opportunity for contraction of organized thrombi and sac wall. It is not easy now to form an estimation as to the exact utility of these agents so used as methods of cure, based on the earlier operations, done as they were before the days of clean surgery. There can be little doubt that the ill result attending several of these was due, as in Moore's case, largely to septic complications. However this may be, the results with horsehair, silk, and gut have not been so encouraging, under like conditions, as those with wire, and this may be due to the fact that material of this sort can scarcely offer so suitable a framework as wire for the formation and support of coagula. It is not easy to fill a sac of some dimensions with such material as silk or gut, which is far more likely than the stiffer wire to be deflected to one side in its introduction by loose coagula present in more or less amount in all cases of old aneurism, so that its equal distribution about the sac is difficult or impossible. For this reason, if coagulation does not at once occur about it, less obstruction would be offered to the flow of blood in the sac, and thus an important factor in cure be lacking. But it is not for these reasons that I would advocate the superiority of wire. Despite the proved occasional utility of horsehair and silk, as in the cases of Bryant and Schrötter, in both of which firm laminated coagula engaged these substances, indicating that coagulation had been favored by their presence in the respective sacs; despite the innocuousness of such material when introduced with the strictest antisepsis, and its susceptibility of admitting of the utmost contraction of clot and sac wall without danger of subsequent irritation, it is not to be preferred to wire for the reason that all the objections which have been urged against the latter may be obviated by the use of a fine and but moderately drawn silver wire, which will permit compression into quite as small a bulk as horsehair or gut, with as little risk of subsequent irritation, and which, in addition, possesses the extraordinary advantage that a method can be conjoined with it whereby certain and prompt fibrin-formation will be promoted in the sac cavity. When it is considered that in many of the cases in which wire was used without electrolysis, especially the earlier ones—which were, of course, done without attention to antisepsis—far more wire was employed than was essential or harmless,[1] and that in many the operation was undertaken as a forlorn hope, the results obtained indicate that the method is not without

[1] In Murray's case, twenty-four feet; in Cayley's, at first forty feet, subsequently thirty-five feet; in Hulke's, thirty-three feet; in White and Gould's, thirty-two feet.

utility. When practised in a manner that experience has taught us is free from risk and most likely to be beneficial, and then, also, combined with electrolysis, by aid of which firm coagulation in the sac can surely be effected, it would appear a most promising mode of treating aortic aneurism not yielding to the Tufnell method or to potassium iodide. With the anode as the active pole, the coagulum produced by galvano-puncture is much firmer than that which forms about unelectrified smooth wire; yet even with many needles in an ordinary-sized sac, as Barwell[1] points out, several trifling nodules of fibrin occurring at the periphery of the sac can have little effect on a large mass of circulating blood. With the combined method the chief objection to the use of a limited amount of fine aseptic wire disappears. Instead of a soft, unstable coagulum about the wire, tardy in appearing, there may be produced almost immediately a tough clot, which, in favorable cases, should tend by accretion to produce prompt obliteration of the sac cavity.

But seven cases of the combined operation are reported; these, with my own, the eighth, are as follows:

CASE I.—Burresi's (Corradi's).[2] Male, aged forty-three years; large aneurism of the ascending part of the aortic arch, non-responsive to carefully applied and varied medical treatment, or to the endermic application of electricity (method of Vizioli-Gallozzi). Case not thought propitious for any treatment, as sac-wall was much thinned, communicating opening large, and tumor rapidly growing. A consultation resulted in the adoption of a method of treatment proposed by Corradi;[3] the latter inserted a canulated needle (diameter 8 mm.) into the aneurism in the second intercostal space, in direction almost horizontal from left to right and from before backward, penetrating the sac a distance of 2 cm.; 42 cm. (17 inches) of No. 30 annealed wire were passed. During its introduction the needle was circumducted with the object of winding the wire into coils on its entrance into the sac. The needle was then withdrawn and the extremity of the wire outside the aneurism connected with the anode of a galvanic battery of sixteen elements, tested by a voltmeter to yield 1 c.c. of hydrogen gas for the first minute. Cathode to chest-wall. Current passed for twenty-five minutes. At the end of the first fifteen minutes of its application all pulsations had disappeared except that communicated from the adjacent part of the aorta. Operation was well borne. Pain entirely gone at end of third day. Patient continued to do well for a time, but subsequently all symptoms returned. Death at end of three and a quarter months.[4] No necropsy.

CASE II.—Barwell's.[5] Male, aged thirty-nine years; luetic history. Very large progressive aneurism of the ascending and transverse part of the aortic

[1] British Medical Journal, June 5, 1888.

[2] Lo Sperimentale, April, 1879, p. 445 et seq.; and also Giorn. Internaz. della Sci. Med., 1881, p. 1109 et seq.

[3] To Corradi is due the credit of first proposing the combination of galvanism with introduced wire, and of treating a case by the combined method. Barwell later, apparently unaware of Corradi's case, suggested a treatment on similar lines, though with a much superior technique to the latter.

[4] It is interesting to note that this case was reported cured in Lo Sperimentale, twenty-five days after the operation. The subsequent account of it is briefly given in a paper by Marcacci in Giorn. Internaz. della Sci. Med., 1881, p. 1109 et seq.

[5] Barwell: Loc. cit.

arch; advanced pressure symptoms; medical treatment of no avail. When almost at the point of death, ten feet of the finest steel wire, which had been spirally wound, were passed through an ivory needle into one division of the sac. Anode active pole; cathode upon upper dorsal region; ten milliampères passed for one and one-sixth hours. Redness of skin produced at site of negative pole; no irritation at point of puncture. Signs of consolidation appeared at expiration of twelve hours: pulsation more distant; tumor firmer; pressure symptoms much diminished. On the fourth day after operation rapid increase in size of a secondary sac to the right of the former. Death on the seventh day from exhaustion and rupture of the secondary sac. Necropsy showed pronounced pressure effects on lungs. Primary sac contained much thick, firm, decolorized fibrin intimately united to sac and wire.

CASE III.—Roosevelt's.[1] Male, aged twenty-five years; luetic history. "Aggravated aortic aneurism threatening death," involving upper four ribs on the right of sternum. Despite medical treatment, rapid advancement. Through a short, insulated aspirator-needle 225 feet of fine steel piano-wire (No. 00) were passed, connected with "one pole of constant battery," which not stated; the other over right shoulder. "About twenty-five milliampères were passed for a half-hour." Potassium iodide (begun before operation) continued. Tumor pulsated less strongly the second day; pain and vertigo present. Third day, tumor less painful, but still pulsated; breathing "not so comfortable." Fourth day, dyspnœa and cyanosis. Seventh day, less pain and cyanosis; in better condition than before operation. During the third week could swallow and breathe with greater ease; tumor felt firmer. In fourth week vomiting and headache; potassium iodide discontinued. On twenty-second day "painful dark-colored spot appeared on one toe." Death on the twenty-third day. Necropsy not permitted.

CASE IV.—Abbe's.[2] Male, aged forty-six years; no lues. Rapidly advancing aneurism at root of neck; oval cavity four inches by five inches; medical treatment unavailing; ligation of carotid, and shoulder amputation decided against. Case adjudged utterly hopeless. Barwell's operation resorted to for the purpose of lengthening life and to lessen pain; 100 feet of No. 1 aseptic catgut were introduced a few days before the wire, following which a part of the tumor seemed firmer, but rapid advancement occurred in other portions, with pronounced pressure symptoms. On the ninth day following the use of catgut, 150 feet of fine sterilized wire were introduced through insulated aspirator-needle. Anode at first the active pole; cathode to back; fifty milliampères for one half-hour; one hundred milliampères second half-hour, cathode active pole, anode to back. No pain; pulsation continued, though tumor wall firmer. On second day rupture of the sac into trachea; pronounced pressure symptoms on trachea had long preceded rupture. Necropsy not permitted.

CASE V.—Kerr's.[3] Male, aged thirty-eight years; luetic history. *Fusiform* aneurism from the base of heart to origin of left subclavian artery. Pressure symptoms. Medical treatment continued three months without result. Six feet of drawn silver wire were introduced through medium-sized hypodermic needle insulated with shellac. Anode the active pole, cathode to epigastrium; current passed fifty minutes, its strength or the number of cells employed not stated. Impossible to force cut end of wire into sac through canula; canula therefore withdrawn; wire cut close to skin and forced in. Pain and pulsation stated to have been greatly relieved, though death occurred on the eighteenth day. Necropsy revealed fusiform aneurism as above. Wire had entered anterior surface of the sac. About the wire, as well as on the sac-wall, a firm clot had formed.

CASE VI.—Kerr's.[4] Male, aged fifty-six years. "Aortic intra-pericardial aneurism," forming pulsating tumors on the right of sternum extending from the second to the fourth intercostal space. Pressure symptoms. No

[1] Medical News, April 9, 1887.
[2] Medical News, April 9, 1887.
[3] Occidental Medical Times, January, 1889.
[4] Loc. cit.

improvement from medical treatment. Electrolysis tried: two insulated needles in sac, anode active, negative on epigastrium; current passed for one hour. No improvement followed. Electrolysis through wire then used, *modus operandi* as above; ten feet of drawn silver wire were introduced; current passed for a half-hour, its strength or number of cells not stated. Within two months the patient left hospital "feeling as well as ever." Promised to report should symptoms return; no word at date of publication of paper.[1]

CASE VII.—Rosenstein's.[2] Obese young male, aged twenty-five years. Venereal and alcoholic excesses. Aneurism of the ascending part of the aortic arch, unimproved by the Tufnel-Balfour treatment. Pronounced pressure symptoms. Galvano-puncture tried; single needle; anode active; seventy milliampères for twenty minutes. Thirteen days later this procedure was repeated with two needles. No improvement. Five and a half weeks later, through exploratory trocar for six minutes a slowly increasing current up to seventy milliampères was passed; lance of trocar removed and two and one-sixth feet of spirally wound, moderately thick, softened silver wire, such as is used in trachelorrhapy (about No. 28), were passed through the canula. The wire was pushed entirely into the sac with the lance, and the current applied for thirty minutes. Pain subsided in a few days; breathing became easier; tumor grew gradually smaller and harder, and the pulsation less. Pulsations had disappeared in the seventh week, complete recovery following.[3]

The history of my case, not before published, involving a number of points of interest, is related somewhat in detail.

CASE VIII.—F. D. F., American, white male, of spare build, height about five feet seven inches; best weight about 140 pounds; occupation, insurance agent. First seen in July, 1888, then aged thirty years. About two years prior to this date pain had developed in the back in consequence of attempting to carry a heavy load. Lumbar pain thus induced, though slight at first, became severe after three or four days, and so continued steadily for about a month. Subsequently pain was chiefly localized in the left lumbar region anteriorly and posteriorly. Besides a dull, more or less continuous ache, there were lancinating pains in the area of distribution of the upper lumbar nerves. Several months before he was first seen, at a time when the pains were very slight or were absent, he indulged in violent wrestling, an exercise of which he was fond. Immediately afterward, while seated, he felt something give way in the former painful area. Shortly subsequent to this a small pulsating tumor appeared in the upper part of the left lumbar region. There was no history of lues. He was a trifle given to excessive venery, but was otherwise temperate. The bowels were much constipated. Examination revealed a small, expansile, pulsating swelling to

[1] Dr. Kerr informs me by letter that he lost sight of this patient about one year following the operation, and that all later inquiries regarding him have been fruitless.

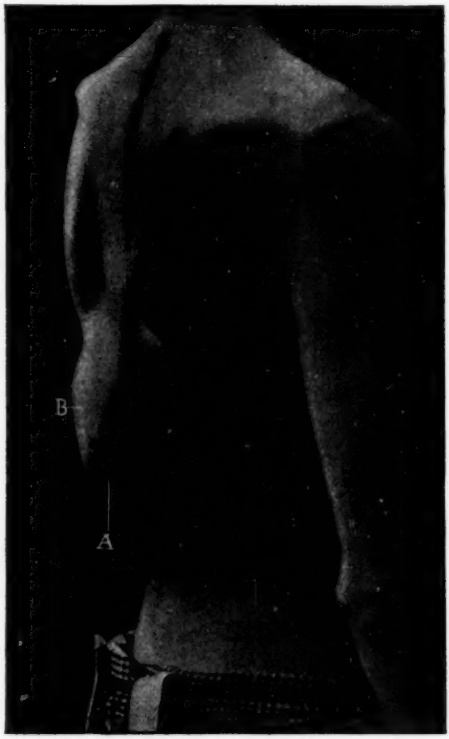
[2] THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, January, 1891.

[3] Under date of February 15, 1892, two years following the operation, Dr. Rosenstein informs me that his patient has continued cured. That he has had "no return of symptoms, except that in March last, after a comparatively mild though prolonged indulgence *in Baccho*, there was a slight irregularity of the pulse and a very faint bruit. Energetic measures as to total abstinence, more rest, and a little potassium iodide with digitalis, helped him in about three months, and he has remained well ever since."

the left of the upper left lumbar vertebræ. Over it the second sound of the heart was plainly distinguishable, but no murmur. The latter was present somewhat above, at the border of the twelfth rib. There was no pulsation or murmur to be heard anteriorly. The heart was overacting, but otherwise normal. No difference could be detected in the femoral pulses. Aneurism of the abdominal aorta was diagnosticated, and the patient received into the wards of the Jefferson Hospital. He was put at rest in recumbency on a spare diet, after the method of Tufnell. Potassium iodide was prescribed at first in doses of gr. x., three times daily, and subsequently in larger amount. The bowels were moved daily by laxatives, and codeine ordered in moderate doses for the relief of pain. The patient could be persuaded to keep at rest only with difficulty, and after a three months' sojourn in the ward, during which the pain much ameliorated and for a time disappeared, though no marked alteration occurred in the aneurism, he left the hospital. As it was thought that rest in recumbency rather than potassium iodide had benefited him, barium chloride was prescribed three weeks before his departure, at first in doses of one-tenth of a grain, and after a few days one-sixth of a grain, with seemingly remarkable benefit in the symptoms. Under this drug (other conditions as before), pain—which, despite every care taken to improve his condition, began to be as severe as formerly—now almost disappeared, and the area of aneurismal impulse somewhat diminished. He could not be persuaded to continue longer in the hospital, as his means were limited, and he felt sufficiently improved to continue his work. He was not seen again until seven months later (May, 1889). He then stated there had been little or no constant pain in the interval, and that he had been able to continue his work without interruption. During this period he had taken the barium chloride in doses of from one-sixth to one-third of a grain. The tumor had not increased in size. In the erect posture the impulse was slight, detectable only by palpation; in recumbency, prone, it was perceptible to the eye, but not nearly so extended as at first, and its sounds were more distant, indicating that partial solidification had occurred. The heart was somewhat irritable, with a relatively accentuated apical second sound. The pulse was: standing, 100; sitting, 96. The bowels, as before, were unmoved without purgatives. Barium chloride was now increased to one-half grain doses.

I subsequently saw him but four times up to October 26th: once in June and three times in October. During this period, contrary to my advice, he actively pursued his vocation, which necessitated a great deal of walking. When seen in the autumn the improvement had ceased to be maintained. Without my knowledge or advice he had increased the dose of barium chloride to three-fourths of a grain a month before I saw him, on October 17th. The area of bulging and impulse was then larger, and the heart was very irritable. Barium was now discontinued. He consented to rest for a few weeks, and pursue the Tufnell treatment; but, after a short time spent in bed, he returned to work, and was not seen again until September last. He then had been confined to the house for two months, being too much prostrated and the pain too severe to go about. During the interval of two years in which I had not seen him he had taken little or no care of himself. His physical condition had grown progressively worse. Despite this, he continued his employment quite steadily until within a few months of

September. More or less gnawing pain was felt in the region of the aneurism, with paroxysmal attacks of left-sided abdominal pain. The bulging posteriorly had reached a length of five and a half inches; its greatest breadth four and a half inches. There were three large nodules upon it, far more prominent than are shown in the photograph.



A. Site and direction of entrance of canula through which wire was introduced.
B. Site and direction of entrance of second needle.

Bulging began opposite the spinous process of the ninth dorsal vertebra, and extended to the lower lumbar spines. The abdomen and ribs were more prominent on the left side, which measured from mid-spine to mid-sternum one and three-fourths inches in excess of the right side. A marked impulse was perceptible to the eye and by palpation in all parts of the aneurism, the walls of which seemed thin and but ill-protected by clot. A murmur was heard over the most prominent portions. No sounds were detected laterally or in front over the prominent left abdomen. The area of splenic dulness was considerably increased. The heart was irritable, its sounds high-pitched, the first lacking in muscular element: the impulse was slightly lowered and displaced to

the left. There was a markedly accentuated pulmonary second sound, without any sign of an obstructive cardiac affection. The pulse was somewhat irregular and compressible. There were also cough, mucopurulent expectoration, and some dyspnœa. Mucous râles were present in the upper part of both lungs, accompanied by diminished resonance on percussion at the left apex. There was an area of anæsthesia extending over the aneurism from about the ninth dorsal spine above and the second lumbar below laterally and anteriorly toward the median line, in a direction slightly downward. Above and below this there was intensely heightened tactile and pain sense, the slightest touch or firm pressure causing much suffering. The superficial reflexes of dorsum, chest, and abdomen on the left side were extraordinarily heightened, very trifling stimulation producing markedly increased response on the same and the opposite side. The right knee-jerk was +, the left + +. Ankle clonus was absent. There was no paraplegia. The pain felt in the back was quite constant, lasting for hours, and was gnawing in character. Excruciatingly severe pain was felt in the left hypochondrium, loin, and abdomen. To relieve this he had been taking codeine in the extraordinary doses of gr. xx. to gr. xxx. daily. This was ordered discontinued, small doses of denarcotized opium at short intervals replacing it. He was removed to St. Mary's Hospital in September.

During his sojourn there his physical condition improved somewhat, but the area of bulging seemed to grow larger almost daily. As the physical signs indicated rapid advancement, and that rupture of the sac was imminent, the performance of electrolysis through introduced wire was suggested to him as offering a chance of at least slightly delaying the fatal issue, and, perhaps, also promoting euthanasia. He was told a cure was now impossible. With this understanding he was anxious for the operation. It was done on December 7th last, with the assistance of Dr. Pottberg, to whose mechanical skill I am indebted for many suggestions of value in the technique. Mr. Otto Flemming, who contributed the electrical outfit and needles, was also present. As my prime object in this case—in which a cure could not be expected—was rather to promote prompt formation of firm protecting coagula, in order to retard rupture of the thin-walled sac, than to cure an aneurism of such dimensions, with symptoms indicating advanced implication of vital parts, I chose a rather heavy silver wire;[1] for, on consideration, I concluded a better chance of immediate success lay in the introduction of wire of sufficient calibre to form large, supporting spirals in the sac, thus occupying considerable of its cavity, and affording a framework for clot, than in the use of a thinner, more pliant wire, which, though better calculated to permit of ultimate contraction of organized fibrin and sac walls—apparently not to be hoped for here—might undergo deflection from its course in introduction through impingement on loose coagula already in the sac, thus perhaps rendering it necessary to repeat the process, which from the patient's enfeebled condition would

[1] "Drawn hard to No. 23 Brown & Sharp gauge." It was so drawn that it would readily form spiral coils. It was afterward kept for several days on a roll two and a half inches in diameter, so that when removed and passed through a canula it assumed separate spirals each of about three to five inches in diameter, a few feet of it covering quite a large area.

have been impracticable. A canulated steel needle, two and a half inches in length, of sufficient size to permit the passage of the wire, insulated with shellac to within half an inch of its point, was used to pass the wire. The wire and needles were sterilized by boiling in carbolated water. The hot water somewhat softened the insulation, which was subsequently hardened in cool air. I feared to use carbolized glycerin to lubricate the needles before introduction, lest this would also disturb the insulation. The use of unsterilized glycerin or oil was considered unsafe because of the danger of sepsis, so the needles were passed after being simply remoistened in water. The canulated needle carrying the wire was inserted to within half an inch of its hilt. A platinum needle was also used, which was passed until it was thought that the insulated part was fully within the sac. I had primarily intended introducing the canulated needle in the upper, most prominent, and apparently the thinnest part of the sac wall, in a downward direction, as nearly as possible parallel with the long axis of the body, hoping in this way to favor coagulation that would protect the exterior wall, but little guarded by clot. Mr. Flemming had made for me four platinum needles of good calibre, two inches in length and insulated to the extent of one inch. These I had also intended introducing below and over the most prominent parts of the sac, in a direction perpendicular to that of the canulated one, connected with the same rheophore, thinking that I might thus be able to secure the formation of multiple coagula extending from the wire to the needles and sac wall, and thus nearly consolidate the sac. Unfortunately for my purpose, it was found impossible to insert the canulated needle above in the direction desired, there still remaining some portions of the ribs yet unabsorbed, which interfered with its introduction. A trial was made in two places, but so much pain and disturbance of the sac was caused by my effort that I desisted, passing the needle below, in an upward direction, with the patient reclining prone.

Two and a half inches of wire were now slowly inserted, the distal end of the wire being first blunted by filing. An effort was now made to introduce the platinum needles. These, however, because of their cutting ends not being spear- or lancet-shaped, could be passed only with the greatest difficulty, the use of oil not being feasible, so that but one of the four was entered. The current was gradually increased through the controller until seventy milliampères were reached, and was maintained at this strength for one hour. The negative (indifferent) electrode was a very large felt plate, which lay upon the right shoulder and scapula, and was kept constantly moist with hot water. Notwithstanding this, and also that its situation was altered as much as space would permit, the large surface covered was the seat of intense pain, so that the current was momentarily opened through the rheostat to place a large folded, thoroughly-wet towel beneath the plate—a method I had before found to be of service when much pain is experienced from the contact of the felt when very strong currents are employed. Pain was unnoticed here after this, and none was experienced at the site of the active pole in either needles or sac. The pulse became quite feeble during the early part of the electrical treatment, but this weakness was not maintained, the patient standing the ordeal well. Considerable difficulty was encountered in withdrawing the needles, due evidently to the firmness of the clot about them. I preferred not to practise a reversal of the current

before their withdrawal, as has been recommended in the electrolysis of aneurism, lest the coagulum forming about the anode be softened by cathodic action. By gentle and continuous rotation and slight traction, with lateral pressure on the sac walls, they were removed, being also aided by an ingenious thought of Dr. Pottberg's, that of taking the lid of a stiff pasteboard pillbox, parting it from its periphery to its centre, and slipping it about the needle's base. Pressure made upon this by the fingers, instead of directly on the sac, enabled more counter-force to be utilized in withdrawal. Before removing the needles an attempt was made to push the portion of wire yet within the canula into the sac. This procedure does not commend itself to my judgment, as it appears that such a method must inevitably disturb the relation obtained by electrolysis between the wire, clot, and sac wall, loosening the coagulum if attached to the sac. But a small portion had been passed in when blood appeared at the canula's extremity, and at the same time the patient stated that he felt something moving within, the first sensation that had been noticed in the sac. The needle was now cautiously withdrawn in the manner stated, the wire cut close to the skin and gently pushed beneath the latter, after drawing the skin as a cover over the wire.[1] During the introduction of the canulated needle blood spurted on the needle entering the sac wall to about the depth of one-third to one-half of an inch, this indicating the extreme thinness of wall, covered by skin, fascia, and muscle, and supposed to be lined by a certain amount of clot. Hemorrhage ceased on passing the wire into the canula. None occurred on withdrawing the needles. Their site of exit was sealed with cotton soaked in iodoform collodion.

The condition of both needles on withdrawal showed unquestionable clot formation about them. Both insulated and uninsulated portions of the platinum one, as far as it had penetrated into the sac cavity, were covered with thick, white, tenacious fibrin, in appearance resembling white paint. The steel canulated one was heavily coated with clot, and its uninsulated portion was partly decomposed, a slight touch on the cutting extremity crumbling it beneath the finger.

A few hours subsequently the sac felt warmer than before, indicating inflammatory reaction, and pulsation seemed much less expansile. Considerable pain was felt in the centre and left side of the abdomen, but no more than had been present before the electrolysis. This was relieved by the passage of flatus and feces. Small doses of morphine and chloral were ordered should the pain become unbearable without their administration, the utmost quiet in recumbency was enjoined, and but little fluid in the shape of drink or food permitted. The patient was very uneasy, as he had been before the operation, though for several days pain was not so severe as formerly, but the same amount of opiate was taken. It was impossible to keep him at rest. He tossed about the bed constantly, and could not be restrained at times from walking about the room. Despite this, a remarkable change was noticed in the condition of the aneurism when the latter was examined on the third day. The prominent pulsating portion through which the canulated needle had been passed had sunken to the level of the general aneurismal surface, and transmitted pulsation alone could be detected in it. The whole of the

[1] The skin had been pushed to one side in introducing the needles in order to form a valve-like opening.

lower part of the sac felt much firmer, and was quite without pulsation, while the extreme upper part seemed to have undergone no change. Yet all parts of the trunk about the sac above and below, laterally and anteriorly, could now be handled lightly and with varying degrees of pressure without the slightest discomfort on the part of the patient, the heightened tactile- and pain-sensibility having entirely disappeared, as had likewise the much-increased superficial reflexes. The tendon reflexes in the legs were not again tested. For several days the pain seemed less. Little, if any, darting pain occurred, but the gnawing sensation was felt deeply in the abdomen, probably due to erosion of vertebræ, and after the fourth or fifth day it became as severe as before. At the end of the ninth day succeeding the operation, immediately after the patient had been tossing himself about on the bed from the prone to the supine position and had been thumping his left side with his fist—a practice he was addicted to when in pain, and which he insisted upon pursuing though aware of its danger—he suddenly called for a cuspidor that he might spit, and almost immediately a gush of blood came from his mouth, and in a few seconds he was dead.

A necropsy was made eight hours succeeding death. Body had been placed in dorsal position; it was still warm. Blood oozed from the mouth when turned upon the side. The former aneurismal bulging had disappeared. On opening the abdomen the sac was not discernible without displacing the stomach and intestines. On removal of the sternum the left lung appeared collapsed. The anterior surface of the left pleural cavity was filled with fluid and clotted blood. The right lung was normally distended with air. Pleural adhesions existed on both sides above, laterally, and posteriorly. The pericardium contained a normal amount of fluid. The heart was one and a half times the size of the closed fist. Left ventricle especially hypertrophied. The valves were normal. The ascending and transverse aorta was slightly dilated saccularly, and the seat of extensive atheromatous degeneration. The spleen was six inches in length, five inches in width, and one and a half inches in thickness. Its anterior surface was adherent to the capsule of the left lobe of the liver, two and a half inches of which extended across a good part of the spleen. The anterior and posterior upper margins of the spleen and about one-half of the upper posterior portion were intimately bound to the aneurism, which lay above it and tended to push the spleen downward and forward.

The sac extended from a point about opposite the right nipple obliquely downward and to the left, across the bodies of the ninth, tenth, and eleventh dorsal vertebræ to the lower edge of the twelfth rib on the left, filling the hypochondrium and a part of the lumbar region. It was twelve inches in its oblique measurement, four inches in transverse diameter above on the right, and six inches below on the left. The aneurism had arisen from the posterior and left lateral wall of the lower thoracic aorta, and subsequently had involved a portion of the abdominal aorta. It had advanced beneath the base of the left lung, and thence downward, the diaphragm forming a partial covering. The anterior wall of the aorta was plainly discernible crossing the sac, the orifice of which measured two inches in length. An effort was made to remove the sac entire without disturbance of its contents, and the left lung with it, into which rupture had occurred. This was found to be impossible without mutilation of the exterior of the body, forbidden by

the relatives. The boundaries of the aneurism, including, as they did, vertebræ and the greater portion of the posterior part of the right trunk, prevented the enucleation of the thin-walled sac without coincident removal of these structures. The sac was, therefore opened *in situ*. It was yet distended with about a quart of clot and some fluid blood. The site of rupture—a one and a half inch tear—was in the upper left portion, the rip extending into the base of the lung, and thence upward toward the posterior part of the apex of the superior lobe and through the visceral pleura. The wire lay in coils in the sac. The highest portion of the most superficial coil was about two and a half inches below the point of rupture. The distal extremity of the wire lay in the same situation, its point curved somewhat away from the ruptured portion of the sac. The wire was adherent below to the sac wall, but whether by clot or through its proximal portion not having completely entered the sac, I could not discover, as when an effort was made to ascertain this the wire and coagula had become loosened in the cavity through a second attempt being made to remove the sac. Firm clots existed in all portions of the aneurism, with softened ones evidently of very recent origin. The wire was engaged in several large, firm clots which were of so solid a texture that when examined in that part of the sac which was removed they could be separated from sac and wire only with some difficulty.

The bodies of the lower dorsal vertebræ were much eroded, the spinal cord, protected only by its membranes and thin laminated fibrin, lying exposed in the sac. These vertebræ formed part of the sac wall, as did also the inner surface of the posterior and lateral portions of the inferior ribs on the left. These ribs, in parts, had almost entirely disappeared. All portions of the periphery of the sac contained more or less white, laminated coagulum, some of which had undergone organization. The rent in the sac extended through laminated clot and sac wall into the base of the lung, ploughing for itself a sinus of some size. The calibre of the greater portion of the transverse colon and all its descending portion were much narrowed. The other abdominal viscera were normal. There were cretaceous nodules at the apex of the left lung.

Although these cases were treated by a similar method, a glance at the histories indicates that their character is so diverse as regards susceptibility of cure, and the application of the method so varied, that it is impossible to draw deductions from the results as a whole as to the utility of the procedure. The latter can only be arrived at by individual survey of each.

The cases of Corradi (Burresi's), Barwell, Roosevelt, and Abbe were apparently hopeless prior to operation, as was my own. In these, more than decided amelioration in the symptoms could not be expected. In the first case of Kerr's, that of fusiform aortic aneurism, this treatment could, of course, be of slight avail. In the remaining two cases, those of Kerr and Rosenstein, the results were decidedly beneficial, in the latter's absolutely curative; in Kerr's the patient was lost sight of, but not until subjective symptoms had entirely disappeared. The fact that

he promised to return should the symptoms recrudesce, tends at least to indicate that this case has also remained well.

In Corradi's case the chances of cure by any method were most remote. The decided temporary benefit following the operation, indicating prompt clot-formation, shows, however, the possibilities of this procedure, which, as practised by Corradi, was faulty in the small quantity of wire used, and in the fact that the wire was not spirally wound before introduction.

In Barwell's case, despite its unfavorable nature, undoubted signs of consolidation in the sac resulted, a fatal issue being due to rupture of a second sac into which the wire was not passed. The presence of firm decolorized fibrin adherent to the wire and sac illustrated the beneficial effects of the electrolysis. Although a current of much greater strength than ten milliampères would probably have been still more productive of good, the final result would have been, of course, similar.

In the case of Roosevelt the amount of wire used—two hundred and twenty-five feet—was probably much in excess of that necessary to fill the sac with coils and sufficient to interfere with subsequent contraction of the aneurism, had the case been susceptible of cure by this method. In Abbe's case one hundred feet of catgut had been introduced nine days prior to the insertion of one hundred and fifty feet of fine steel wire, a quantity greater than could be attended with the best ultimate results had a cure been within the range of probabilities. Here, too, the method was faulty, in that the polarity of the current was reversed after fifty milliampères had been passed by the anode for a half-hour; the effect of one hundred milliampères through the negative pole for the same time subsequently, probably being to soften and partly dissolve the firm coagulum formed about the positive pole.

In these four cases fine steel wire was used. In Kerr's cases and in Rosenstein's and my own case, silver wire was employed. Kerr used ten feet of silver wire of a calibre somewhat greater than the bore of a medium-sized hypodermatic needle which it was drawn to fit. Rosenstein used two and one-sixth feet of softened silver wire. In my case, two and one-half feet of drawn wire of rather large calibre were inserted.

As the immediate cause of death in a number of cases in which filiform material was used has been rupture of the sac, it is important to inquire as to the influence of introduced substances, and especially wire, in its production. Rupture may follow the insertion of filiform material of any sort, in consequence of the partial obliteration of the sac cavity by formed coagula resulting in rapidly raised pressure on an unprotected and weakened portion of the sac now exposed to a greater pressure than formerly. This was probably the cause of rupture in Barwell's case and my own, as well as in those of Domville, Ransohoff,

and others,[1] in which a necropsy showed that no wire lay near the site of rupture. With the use of too firm a wire, or of wire in too great quantity, rupture is especially to be feared as a result of its interfering mechanically with contraction of fibrin and sac wall, and tending by its resistance to weaken a part of the latter. If steel wire be used, an additional danger may lie in the likelihood of its fracture in several places during contraction of the consolidated aneurism. The sharp extremities of these broken portions might be productive of great damage to the sac wall. Rupture apparently is only likely from the direct action of the wire when unyielding material, such as steel or highly-drawn silver, is used, or when an excessive amount of wire of any sort is introduced. Therefore, while it is important that the wire used should be sufficiently firm to be readily introduced, it must, on the contrary, not have so much permanent spring as to resist contraction of the clot of which it must necessarily form a part. Soft iron wire has been especially recommended by Steavenson,[2] as best fulfilling the various indications. He suggests that during the passage of the current soft iron wire would undergo decomposition, with the formation of chloride and oxide of iron, which would in addition exercise their own specific coagulating property. I was at first much inclined to the use of soft iron wire in preference to wire of other metals, until I undertook some experiments as to the influence of currents on the former, the result of which has caused me to prefer a wire less likely to be decomposed by the battery. In passing a current of fifty milliampères for one hour's time through ten feet of No. 36 soft iron wire, connected with the positive pole, and placed in twenty ounces of three-quarter per cent. salt solution, the circuit closed by the cathode in the fluid but not in contact with the anodal wire, an amount of detritus resulted, representing iron chloride and oxide, from the decomposition that had occurred between the wire and the solution under the influence of the current, that would be dangerous to release in an aneurismal sac. A portion of it would, of course, become engaged in the forming clot; another portion, however, might readily be carried into the circulation, and provoke the formation of thrombi elsewhere. A current of much less strength had a proportionately similar effect; that of ten milliampères for the same time also caused the formation of much sediment. Since it is of the utmost importance that a firm thrombus be promptly formed about the wire, and as this is more likely to result through the passage of a strong current for a considerable time, such as fifty to seventy milliampères for one hour, and since this strength

[1] In these, coagula forming about the wire had not completely filled the sac. In my case the sac was of such dimensions that the spirals did not reach much beyond the upper half, the wire having been introduced from below, and but two and one-half feet having been used.

[2] Lancet, July 11, 1887.

of current for this time, carefully applied, is attended with no more risk than a less strength for a briefer time, it is important that the amperage be high and the session long. But this would be attended with the above-mentioned danger if soft iron wire were used, and as steel is also objectionable for the reason before stated, wire of another metal, such as silver, is to be preferred. Silver salts will not be formed under the current's influence in appreciable quantity, and yet the wire will be sufficiently corroded to favor the deposit of fibrin upon it. The wire should be fine, and should be drawn just sufficiently hard to be readily passed through the canula forming spirals in the sac of about the size desired.[1] The cases apparently in which the best results were obtained, both when wire alone was used and when reënforced by galvanism, were those in which ten feet or less of wire were introduced.[2]

As Kerr remarks, six to ten feet are sufficient to introduce into any aortic aneurism, the object being merely to favor deposition of fibrin, and at the same time to provide a supporting matrix for the clot. As a means of demonstrating that but little wire is essential, he suggests the passage into a bottle the size of the aneurism, through a perforated cork, of sufficient wire to fill it with loops. It then will be seen how few feet are necessary to come into contact with all parts of the bottle's interior. He believes, also, that when a greater amount than ten feet is employed there is danger of the excess passing away in loops into other portions of the vessel, or, when the sac is in juxtaposition to the heart, of its entering the ventricle.

2620 North Fifth Street, Philadelphia.

THE RELATION OF MICRO-ORGANISMS TO THE DISEASED ENDOMETRIUM.

By Ernest Laplace, M.D.,
of Philadelphia.

The following are the results of some experiments made by myself in Koch's laboratory in 1887–88, and heretofore unpublished, upon the pathology of the endometrium. I was at that time engaged upon

[1] Kerr (loc. cit.) directs that the calibre of the wire selected be somewhat larger than the diameter of the canula, and that it be drawn through a plate until it develops spring enough not to "kink." It must not, however, be overdrawn, as in such a case it will not coil away from the point of the canula, but will impinge on the opposite wall of the sac, as was the case in a third patient upon whom Kerr attempted the introduction of wire.

[2] Loretta's case, practically cured when death occurred, ten feet; Morse's case, cured, four and a half feet; Kerr's case, thought to be a cure, ten feet; Rosenstein's case, cured, two and one-sixth feet.

solving the problem of causing mercurial solutions to retain their virtue and preventing the formation of a precipitate in the presence of albuminoid substances. Having prepared and described that which has since been known as the acid sublimate—that is, the combination of sublimate with an acid (say tartaric, citric, or any other), whereby these above-named objections were met—a direct application of this was essayed upon patients in the various clinics in Berlin.[1] Among the many experiments made were attempts at disinfecting the endometrium. Of course, I had to find out what was to be destroyed in the way of living germs in order to establish the action of the antiseptic. It was in this way that I was led to investigate the conditions of the endometrium in its relations to microörganisms. In order to have a more accurate notion, I examined the scrapings from the uterus of six healthy women. This was done with the sterilized platinum loop and brought into twelve tubes, six containing peptonized bouillon and six glycerin-gelatin. The latter were used for pouring plates. The same experiment was repeated in each of the six cases, with the following result:

The loop was passed through the length of the uterus to the fundus, scraping the mucous membrane, and then brought out; this was then introduced into the respective tubes. The bouillon tubes were placed in the incubator, and became turbid with the development of microörganisms on the second day, in each instance. The gelatin plates developed an average of twelve colonies of bacteria each, which, on examination with the microscope, proved to be mostly the various streptococci of suppuration. There were, however, a few colonies the identity of which could not be easily recognized, and consequently transplantations of these were made into fresh bouillon tubes, and after two days' incubation a series of three guinea-pigs was inoculated with them. One of the colonies was of a whitish, mother-of-pearl appearance, with dentated edges, and singly these organisms presented the appearance of bacilli, about the same length, but much thicker than the tubercle bacillus. The guinea-pigs inoculated with ten drops of the fluid culture of these germs died within from five to seven days, without any special external manifestations. Their autopsy showed invariably the presence of the same organism in the blood, and the liver and kidneys were enlarged and fatty, showing that they had succumbed to a rather severe form of septicæmia For convenience sake we will call this microörganism *x*. A second organism not recognizable was one that presented very small colonies, perfectly white, and which soon liquefied the gelatin. On microscopical examination these colonies were found to consist of micrococci. Bouillon pure cultures were made from these colonies and three guinea-pigs inoculated with ten drops of this culture. In two instances these animals died of a form of pleuro-pneumonia in from four to six days. The third pig did not suffer from the inoculation. This unnamed organism we will call *y*.

A third colony, the identity of which I could not recognize, presented a grayish appearance, with a troubled surface; it was also found to be a micrococcus. Upon injecting bouillon cultures of it in guinea-pigs

[1] Berliner med. Woch., 1887, No. 54.

the animals presented no reaction whatever. This organism we will designate as *z*.

As a result of this group of experiments, we see that in the healthy endometrium are present numerous organisms, pretty much the same as would be found in the nose, and their presence might be accounted for by their travelling from the pudendum into the vagina. The normal secretions of the uterus seem to retain them indefinitely. They seem to do no more actual harm there than do the hundreds that inhabit the saliva. They are kept at a respectful distance from the bloodvessels by the mucus, and, *not developing*, do not exert any irritation; in a word, they exist quite superficially.

I then, through the courtesy of Dr. Fehleisen, procured specimens of secretions from women with endocervicitis.

Using the platinum loop in precisely the same way that we did above, and inoculating the same number of bouillon tubes, we found that the liquid was troubled but a few hours after inoculation, while the gelatin plate in each instance developed an enormous amount of colonies—say between three hundred and four hundred—remembering that we apparently took the same quantity as in the case of the healthy patient.

In the plate cultures we recognized vast numbers of streptococci pyogenes aureus, albus, and citreus, a few bacilli pyocyaneus, and also many of our unnamed colonies which we had found in the healthy patient and which we designated above as *x*, *y*, and *z*. It happened that in these cases we did not find the gonococcus of Neisser. All that it was our power to observe was the difference in the number of colonies to each plate and the presence of the bacillus pyocyaneus, which we had not found in the case of the healthy women.

After having carefully cleansed the parts with warm water and removed as much of the secretion as possible, the experiment was repeated, scraping the mucous membrane with the platinum loop. The result varied but slightly, eighteen plates thus prepared showing an average of two hundred colonies each.

From the above experiments it seems that when the mucous membrane of the cervix is inflamed the microörganisms normally present exist in much vaster quantity. Here we might ask ourselves whether they exist as cause or effect. But we prefer to postpone the consideration of this point. Prof. Martin furnished me, at his clinic, with the scrapings from six different patients whom he had curetted for chronic endometritis. In two cases there were pieces of diseased tissue of a size sufficient to be imbedded in celloidin, and sections were made. These were found to consist of a mass of fibrous tissue, corresponding to what Martin has styled "interstitial endometritis," but which we know to be simply the expression of a slow and chronic form of inflammation. The glandular elements seemed compressed and diminished in size and calibre, the mass of the specimen appearing to consist of closely organized fibres. Here and there a few spindle-shaped cells and still fewer young round

cells. Staining these sections by Gram's method, we distinguished in the depths of this tissue the presence of streptococci here and there.

Some sections presented more of the so-called glandular form of endometritis; that is, the epithelial lining of the glandular acini was greatly hyperplastic, forming in some places arborescent excrescences, the surface of which consisted of cells disintegrated and disintegrating. In these but little fibrous tissue was to be found, and we concluded that the inflammation was of a more superficial character and acute in nature. Here throughout the inflamed area could be distinguished vast numbers of microörganisms. I would not weary the reader with a further detailed histological description, but say simply that in both forms were present in the tissues themselves, microörganisms of apparently the same nature as had been found heretofore, but now imbeded in epithelial cells of various shapes and even in the deeper fibrous tissue of interstitial endometritis. The identity of the various microörganisms was proved by particles of this tissue being placed in glycerin gelatin and poured plates, which developed no colonies which we had not recognized before. Though the colonies were plentiful (50–100), I cannot lay any stress upon this point, inasmuch as it was impossible for me to compare the particle of scraping with the apparently corresponding amount of fluid taken up in the platinum loop. Three cases of women having gonorrhœa were examined. The same quantity of secretion was examined. Plates developed 200 to 300 colonies, but no gonococci, as they do not develop on gelatin. Microscopically, the secretions contained large numbers of micrococci and gonococci. Scrapings from the uterus showed the presence of the gonococcus throughout the degenerating epithelial cells.

From the above experiments we gather that—

1. The normal endometrium of uterus and cervix is a harbor for vast numbers of microörganisms, most of which are known to us, but some still unknown but possessing poisonous qualities for guinea-pigs.

2. The inflamed endometrium contains the same kinds of microorganisms, but in vaster quantities, the superficial exfoliating cells also containing them.

3. In chronic endometritis the secretions contain about as many infectious organisms, the mucous membrane and fibrous tissue become greatly hypertophied under the continued development of these organisms, and whether this chronic condition be simple or gonorrhœal, we find the germs both in the epithelium and fibrous tissue.

It now becomes necessary to explain how these organisms get to the deeper parts, and explain how far their relation as a *cause* of the inflammation extends.

It is plain that the mere presence of the microörganisms does not suffice to constitute disease. Disease is the reaction upon the system

—local or general, or both—resulting from the *developing* organism. In the uterus the normal secretions are a *poor* culture medium for germ life, and at the same time keep the microörganisms at a distance from the bloodvessels. If given the proper opportunity, however, if furnished with blood or serum retained any undue length of time within the uterine cavity, microörganisms develop therein with as remarkable rapidity as they do upon artificial culture media in the laboratory. Now the conditions will have changed, and enormous hordes of bacteria soon develop from those already present, and infect the tissues. In our observation, judging from the reaction of tissues under the influence of developing bacteria elsewhere, we would say that cold is, perhaps, the most frequent cause of the initial process; the congestion which soon follows the action of cold upon the tissues being familiar to us all. Next follows the exudation of serum, which is soon contaminated by the bacteria in the neighborhood; these finding their most favorable soil develop rapidly, producing a chemical irritant or ptomaïne which is the decomposition of the serum incident to their growth; this acts as a direct chemical irritant which keeps up indefinitely the irritated condition of congestion and hence hypernutrition of superficial cells, proliferation of cells resulting, which cells naturally find their protoplasm inoculated from the first with the bacteria under whose impulse they developed.

In the chronic form with hyperplasia of fibrous tissue, there occurs to me no explanation but that the original infection took place as above described, and that, either from neglect or other causes, the parts have become so irritated that the deeper fibrous tissue, under constant congestion, became infiltrated with white blood corpuscles by diapedesis, which gradually built new fibrous tissue, dovetailing with that already existing.

Simply from a histological and pathological standpoint, inasmuch as the foundation of treatment in disease is the removal of the cause, finding that these microörganisms exist nearly always to a certain depth, curetting is the rational treatment—removal of all the diseased cells through which we could not expect an antiseptic to act. Thorough scraping being done, it but remains to so sterilize the regenerating mucous membrane as to leave it uncontaminated. Here the acid sublimate solution finds a happy application in the strength of from 1 : 2000 to 1 : 5000. At the end of a few days the uterus replenishes itself with a new mucous surface.

MULTIPLE SARCOMATA. HISTORY OF A CASE SHOWING MODIFICATION AND AMELIORATION OF SYMPTOMS UNDER LARGE DOSES OF ARSENIC.

By Samuel Sherwell, M.D.,

CLINICAL PROFESSOR OF DERMATOLOGY, LONG ISLAND COLLEGE HOSPITAL; ATTENDING PHYSICIAN, BROOKLYN HOSPITAL; SURGEON TO SKIN AND THROAT DEPARTMENT, BROOKLYN EYE AND EAR HOSPITAL.

The following are the chief points of interest, in giving the subjoined history, or rather histories, of this interesting case.

1. The very large dosage of arsenical solutions.
2. The extreme tolerance of them by the individual.
3. Their well-marked beneficial effect upon the growth and the individual.
4. The complete or almost complete subsidence of the tumors at various times while the treatment was under way, and their ready recurrence on suspension of same.
5. The relative obstinacy of the growths situated on the neck and head to treatment.
6. The evident delay of the ultimate lethal issue, in spite of the recalcitrancy of the patient.
7. That the treatment instituted was original in character, the author at the time of its commencement not being acquainted with the writings and experiments of Köbner and others in the same direction.

The patient, Mr. G. S. H., aged thirty-nine years, native of United States, medium height, fairly well-built and nourished, of somewhat nervous and anxious expression, was first seen by me at my office toward the end of February, 1888. He had at the time a large indolently ulcerating tumor situated on the posterior portion of the left thigh, the lower portion involving the upper part of the popliteal space; he claimed that it had its origin in irritation caused by an uneven and broken high stool, upon which he had been accustomed to sit at his duties as a clerk in an office; it first commenced as an indurated lump with inflamed border, then began to ulcerate, about four months previous to his first visit, and had become as I now saw it. He dated his earliest noted symptoms back to about a year from the date of visit. Recognizing an interesting and probably malignant trouble, I treated him a few days with placebos and cleansing applications. The New York Dermatological Society meeting of February, 1888, occurring a short time after, I presented him there for diagnosis and discussion on his case, which is reported briefly, in the April number of that year, in the *Journal for Cutaneous and Venereal Diseases*, under the heading of "The Society's Proceedings." It was regarded as malignant by most of those present, my own opinion being that it was sarcomatous.

Ablation was recommended by almost all. He would not submit to this, and refused even to have a small piece taken out for microscopical examination.

The tumor grew rapidly larger, while the patient still deprecated any operative measures, although strongly urged, until, the indications of its malignity becoming evident even to himself, he at last yielded, and on April 15, 1888, at his own house, I removed the whole of the tumor and surroundings down to the fascia, by a nearly circular incision, the wound measuring four and a quarter inches in diameter, the tumor itself at the time measuring three and a quarter inches in diameter, so that the zone of slightly involved tissue was well included; the wound was cauterized with chromic acid and allowed to heal by granulation. Portions of the tumor extending from the free margin to the centre were examined by Drs. G. T. Elliott, A. R. Robinson, the President of the Brooklyn Microscopical Society, and myself, all coming to the same conclusion, that it was undoubtedly sarcomatous.

The progress of healing of the wound being necessarily slow, he was allowed to leave for the country (New Hampshire, his home) at the end of May; he remained away a little over a month, returning at the end of that time with still a small open sore. During this month's absence another small button-shaped and quickly ulcerating tumor had appeared on the right thigh just below Poupart's ligament, which he absolutely refused to let me excise or take other radical means to remove. He still remained inattentive as regards visits, although he said he would try any medicine, and begged for it. Later on, in the course of three months, a large number of other tumors appeared in various regions of the body; on both nates, sides of chest, over the shoulder, on the arms, were quite large ones, all of which developed more rapidly than the first in the femoral region, with which they were uniform in general appearance and mode of progression, save that there was greatly increased rapidity of development everywhere.

I had given no internal treatment to speak of up to this time, except for a short time at the end of February and beginning of March, when I tried an active course of mixed treatment which seemed to hasten ulceration, and was consequently stopped.

The same requests, as at first, for instant operation for ablation of the growths met with the same fight for delay, so that it was not until he became hopeless of any improvement without that course, that he finally consented, and on October 7, 1888, he entered Brooklyn Hospital, as my private patient, I being then on service, for a course of entirely radical treatment.

I operated on him on that day, he being under anæsthesia about two hours. I removed the tumor in the femoral region (it measured two inches in diameter) by excision; six other large ones, none being less in diameter than a silver dollar; and a number of smaller ones, about thirty in all, I extirpated partly by excision, partly by *raclage* with sharp dermal curette; cauterizing all with chromic acid around edges of wounds, and thereafter using bandages and dressings of simple cerate. I had previously resolved to test the effect of arsenic in full doses, and in a cumulative way, having a distinct belief that it would favorably affect his condition, but must own that I was surprised at the evident beneficial effect in a relatively short time. I put him, then, about thirty-six hours after the operation, on a mixture of four parts of Fowler's to one of Donovan's solutions, to commence with eight-drop doses of the mixture four times a day, adding daily at least one drop to each dose, sometimes more, until I had him taking twenty-six to thirty

drops four times a day; about that time he would usually, and sometimes before he reached that limit, show an amount of constitutional reaction, which though not as extreme as might be thought, would be sufficiently marked to show the danger limit, and the stomach would give out a little, so that it would become imperative to suspend the remedy for awhile, and give the stomach rest for a day or two, never longer, beginning immediately again with about ten-drop doses.

Many of the small tumors, half-pea sized, or even larger, which I had not curetted, disappeared in a very few days, not more than a fortnight or at most three weeks after instituting this constitutional treatment; all infiltration of the edges and areola dying away where there had been infiltration around other tumors, and on the former sites of these small tumors an atrophied spot could be felt, such as occurs in morphœa or in scleroderma after subsidence of the acute lesion. He did steadily well, became able to attend to business in some measure, and in December 1888, I first took him to my friend, Dr. A. R. Robinson, who had previously been in consultation with me just before his reception into Brooklyn Hospital, for a thorough examination, and subsequently took him to the December Session of the New York Dermatological Society, when I placed him in evidence as a valuable, not to say wonderful, illustration of what arsenic can do in modifying this form of kakoplastic embryonal fibrous tissue. He then, with my permission, took cars for his native place to pass Christmas and New Year, with precise orders how to take his remedies, when to leave them off, and with most distinct and solemn promises on his part to keep me well posted as to his progress, etc. I heard thereafter *once* or *twice* from him at disconnected times; he evidently fell under influences that were not favorable, with one exception, that of Dr. S——, a practitioner of the town in which he lived, who used his best efforts to keep him in line, but failed; so that from this time I may be said to have lost control of the case.

When I next heard of him he was in the hands of Dr. John B. Wheeler, of the College and Mary Fletcher Hospital, Burlington, Vt., who kindly furnished the following complementary history:

"When Mr. H. first came under my care, February 15, 1889, he was covered with the sarcomatous growths with which you are familiar. They varied in size from one-eighth inch to two and a half inches in diameter. He was in a condition of extreme exhaustion, excessively hyperæsthetic, so that he could hardly bear a touch without screaming, sleeping with great difficulty, and almost devoid of appetite. Under these circumstances I thought it best not to begin the arsenic treatment which he said had had a very good effect on the growths but a very bad one on him, and I therefore put him on quinine, stimulants, and morphine, with the intention of building him up and of removing the growths as fast as I could. This treatment was continued until May 1st. During this time I operated on him four times, at intervals of two or three weeks, and removed in all one hundred and seventy tumors. They were cut out with scissors and the raw surfaces thoroughly burned with the Paquelin cautery. Careful antisepsis was observed, but after granulation began the raw surfaces were dressed with balsam of Peru. Microscopical examination of the growths removed showed a structure fairly typical of sarcoma. Recurrence took place faster than it was possible to operate, and the only advantage afforded by operation was

that the growths were removed when they were small. No recurrence, however, ever took place in a cicatrix, except on the scalp, where the skin surrounding the growths had become much more infiltrated than elsewhere. Everywhere else the wounds granulated well and cicatrized quite promptly, the new growths all appearing in the sound skin.

"On May 1, 1889, as the sarcomata were multiplying rapidly and the patient had got into a very fair condition of general health, I began to give him the same mixture which I believe you used, one part of Donovan's solution and four parts of Fowler's. The dose was at first ten drops, t. i. d., but as soon as I found he bore that without trouble, the dose was increased one drop every day. He stood this very well until doses from eighteen to twenty-five drops were reached (sometimes I could get him up to twenty-five, sometimes not above eighteen) when his appetite disappeared, his eyelids swelled, and he became nauseated, and very nervous and hyperæsthetic. The dose was then cut down to ten drops, when he would become all right again, whereupon the dose was again gradually increased to the limit of tolerance. He took his arsenic in this way as long as he was under my care, raising and lowering the dose according to indications, and also took from one and a half to six ounces of whiskey, and from ⅛ gr. to 1 gr. of morphine daily most of the time.

"In about four weeks it became evident that no new growths were appearing, and that those which had grown since the last operation (some thirty in number, some of them one inch in diameter and badly ulcerated) were less angry looking and were diminishing in size. By the end of June, *not the faintest sign of a malignant growth was left*[1] on the man (except the cicatrices showing where the growths had been), saving some half-dozen on the face and scalp, which for some reason (great vascularity of skin of those parts?) seemed to resist the arsenic with uncommon obstinacy.

"By the 20th of July, the patient had become so thoroughly poisoned with arsenic, swelled eyelids, loss of appetite, strength, nervousness, hyperæsthesia, and despondency (no diarrhœa) that I became alarmed and stopped his arsenic for ten days, at the end of this time his general health had improved greatly, but a dozen new sarcomata had appeared on trunk and extremities.

"The arsenic was resumed July 30th, in the same way as before. For about a week the sarcomata enlarged until some reached one inch in diameter, then they became less inflamed and diminished in size. No others appeared.

"By August 22d several of the growths had disappeared and the remaining ones were steadily diminishing. At this time the patient became very desirous to go to his home in New Hampshire, and as he was in fair condition and apparently able to stand the journey, I consented to his departure, which he took on that day. My only news from him since then is a short note written by his physician the day after reaching home, which informed me that Mr. H. had stood the journey well."

The exact date of his demise I do not now remember, but his friends informed me that it was about the end of December of that year, it being

[1] Underlined in original.

due apparently to neglect of remedies, recurrence, and consequent exhaustion.

In regard to what I have termed, at the commencement of this paper, the points of interest in this case:

First. While there may be records of larger therapeutic doses used than those here given, the time element also being considered, none such have come under my notice in my readings. The daily amount of arsenious acid was, as will be noticed, about a grain a day at times. As regards the mixture, which will be remembered as being four parts of Fowler's and one of Donovan's solutions respectively, I may say that I added the latter solution, not for its specific mercurial effect, but as an additional and effective absorbent or resolvent agent.

No doubt as to correctness of diagnosis is probable—the high grade of examiners renders that impossible; but should such doubt exist, the balance of the larger tumor is still in alcohol in my possession, and is at the service of anyone interested in the subject.

Second. The tolerance, as was evident, was exceedingly marked, and the very rapid disappearance of toxic symptoms on cessation of the remedy was peculiarly so; in a couple of days, ordinarily, all such symptoms, gastric or other, would entirely disappear. This, however, I do not think unusual, as a good many patients suffering from psoriasis whom I have treated at some time by arsenic in the course of their disease, have shown the same ready disappearance of bad effects.

Third. It is now scarcely necessary to say anything as to the effect upon the individual or the tumors; as to the latter the history speaks, but as to individual it may be further said that while he was under observation the fairly large doses (not those near the toxic mark) seemed to benefit and improve nutrition and strength.

Fourth. The subsidence of the tumors on taking the remedy has also been sufficiently dwelt on in the histories, but it would seem important to call attention once more to the fact of their extremely rapid recurrence on disuse of the remedies; this was very marked, and seemed to be very like a problem in arithmetical progression; the more tumors present, the more rapidly would others develop in other parts, and the more readily would ulceration in the larger ones begin and continue.

Fifth. The relative regional obstinacy in regard to treatment. This was noted by Dr. Wheeler particularly, and though not so specially noted in my history, was observed by myself. To particularize: At the time of operation in the hospital, I purposely left one growth on the neck, above the collar, in order to better observe its conduct while under constitutional treatment: precisely that one, and one or two others on the scalp, were the slowest to respond, persisting after others had entirely disappeared. I have noted this fact before, and in an article read before the American Dermatological Association, "Remarks on, and

Queries as to, the Relative Frequency of Pathological Changes in Moles and other Tumors on the Face and Head," which was published in the *Journal of Cutaneous and Genito-urinary Diseases*, January, 1887, I use the following words: "There are many other parts of the body, it would seem, equally or more exposed to these accidents than the carefully guarded face; as for instance the hands, nates, waist, and neck; the two latter from constant friction of clothing and other causes. Moles and other small tumors are sufficiently common on all parts of the body, but it would appear by the statistics given, and by other experiences of the writer, that the ratio of further and destructive pathological activity is much less in them (that is in all other parts of the body) than on the head and face." Further: "The most rational way of solution or accounting for the frequency of these growths on the site mentioned is probably that it is after all due to the extent, nature, and abundance of circulatory nutrition, which must favor hyperplasia in these well-supplied parts," etc.

Sixth. Delay of lethal effects of the disease I shall not dwell upon; it was certainly evident to all having any close connection with the case.

Seventh. As has been stated, though it may read as a confession of carelessness on his part, the author at the time of inception of constitutional treatment was ignorant of the records of recent experiment of others in the same direction. He had, however, been long convinced of the inhibitive efficiency of the drug in other malignant affections, notably epithelioma, and has been very lately additionally confirmed in this by many cases, among which may be cited a recent and marked one of genital epithelioma; a secondary operation having been done, followed by a third, to remove immensely involved inguinal glands and tissue. The operation was brilliantly and radically performed by one of New York's leading surgeons; but all the consulting medical men (at least five in number, including myself) decided it was impossible, or almost so, for recurrence not to rapidly take place, and the patient was by general verdict given anywhere between three and six months to live. This occurred about a year since. Arsenical treatment, at my suggestion, has been since employed. The individual is now living and enjoying better health apparently than for some years previous. This conservative result, I believe, has been largely due to the result of this constitutional treatment.

Dr. H. Köbner's writings and cases came under my observation some months after inception of my treatment, but since that had acted so well, I did not feel like "changing horses while crossing a stream," and persevered with internal medication.

It will be noted that Dr. Köbner gave his arsenic hypodermatically, which doubtless has its advantages, but also its disadvantages, as causing slight wounds and points of irritation.

I do not see why the conjoined treatment, internal and hypodermatic, might not be used with greater benefit than either alone, or at least so, where rapid results seem necessary.

His papers will be found in the *Berliner klin. Wochenschrift*, 1883, page 21, under the title of "Heilung eines Falles von allgemeinen Sarcomatose der Haut durch subcutane Arseninjection." Also, in 1886 (*ibid.*, p. 193), there is report of a case shown at a meeting of the Berlin Medical Society, under the heading "Vorstellung eines Falles von multiplen Hautsarkomen der Extremitäten."

Dr. Funk, of Warsaw, in the *Monatshefte f. prakt. Dermatologie*, 1889, viii., page 19, publishes an exhaustive article under the title of "Klinische Studien über Sarkome der Haut," giving histories of cases of his own in which he had followed Köbner's plan of treatment, and a general *rêsumé* of the subject and writings thereupon. The article would serve as a bibliographical index. He recommends, as does Köbner, the injection of a recent solution of arsenite of soda, as being on the whole the best.

As I have before said, the union of the internal and hypodermatic methods would, however, in my opinion, seem to offer the best future therapy.

REVIEWS.

RECENT WORKS ON DISEASES OF THE NERVOUS SYSTEM.

THE DIAGNOSIS OF DISEASES OF THE NERVOUS SYSTEM: A MANUAL FOR STUDENTS AND PRACTITIONERS. By CHRISTIAN A. HERTER, M.D. New York and London: G. P. Putnam's Sons, 1892.

A MANUAL OF DISEASES OF THE NERVOUS SYSTEM. By W. R. GOWERS, M.D., F.R.C.P., F.R.S. Second edition, revised and enlarged. Vol. I.: Diseases of the Nerves and Spinal Cord. With one hundred and eighty illustrations, including three hundred and seventy figures. Philadelphia: P. Blakiston, Son & Co., 1892.

DR. HERTER'S book is happily free from the sketchiness and incompleteness that characterize Dr. Ormerod's little treatise, recently under review. It is, in fact, one of the most notable productions of the American press in neurology in recent years, from its admirable mastery of details and its broad grasp of the general subject. It is, of course, merely a restatement of the well-recognized facts of neuro-pathology, but it is a good one. Such a book deals necessarily with the results obtained by other men. Not the author, but the great body of diligent workers everywhere have established the facts and laid down the principles that make such books possible. Hence, for the reviewer, especially if he seeks for novel and original results, there is not much to say about the book, except to acknowledge cordially its general excellence, and to commend it as a useful implement in the clinical workshop. With the aid of such books the daily work of the average practitioner is not only helped, but even made possible. Their essentials are accuracy and clearness, and these qualities Dr. Herter's book has to an unusual degree. It is lacking, to a remarkable extent, in bibliographical references—in fact, there are almost none. This must be an omission, as no one, not even of the widest clinical experience, could prepare such a digest without frequent references to the writings of his co-laborers in neurology.

In the diagnosis of diseases of the spinal cord Dr. Herter follows closely the conventional standards. For him myelitis and all its subdivisions exist as of old, and he points out faithfully the various symptoms that differentiate them. He says, to be sure, in one place that the question depends much upon our conception of inflammation; but he does not discuss the important questions as to the essential nature of the pathology of the so-called inflammatory, as well as of the degenerative, processes of the cord. This is well, perhaps, in a book that is concerned rather with clinical types than with obscure questions in pathology. There is, however, much reasonable doubt as to the very existence of a true myelitis except as a result of infection. Tubercle —as in Pott's disease — syphilis, and various blood-poisons produce

the type of myelitis about which there can be no debate. But the numerous mixed and *bizarre* cases, either due to trauma or vaguely ascribed to cold, over-exertion, sexual excess, etc., are doubtfully inflammatory; some of them in the past have been certainly cases of neuritis, while most of them are probably due to shock, pressure, injury, vascular disease, or to gliomatous changes of doubtful origin.

This subject of gliomatous changes in the cord, and the malign influences that set them at work, is one of the important questions to-day in neuro-pathology. The French give this morbid process the generic term *gliomatosis*. It is this process that underlies syringomyelia, and, as Déjérine has shown, Friedreich's ataxia also. We have elsewhere pointed out the probably close connection and confusion of these two so-called diseases. Griffith's statistics of Friedreich's disease prove incontestably that at least twenty-five per cent. of the autopsies show the anatomical changes ascribed peculiarly to syringomyelia—*i. e.*, extensive gliomatosis with cavities in the cord. A recent case observed by the writer revealed diffuse gliomatosis of the cord, medulla, and cerebellum; the clinical type had been that of brain-tumor. All this bears very directly upon diagnosis, and must in time modify the accepted clinical distinctions. As Dr. Herter's book deals mostly with elementary topics, he has probably thought it best to avoid these unsettled problems. Yet we think it would have been appropriate to discuss them, even in a treatise on diagnosis—because diagnosis, after all, is the recognition of disease processes rather than the elaboration of clinical types.

Dr. Herter has a very methodical plan. He first discusses the structure and functions of the nervous system, then symptomatology, then localization, then pathology, then clinical types, and finally the distinction of functional and organic disease. Special chapters are given to the examination of the patient and to cases illustrative of diagnosis. Thus, the scope of the book is broad, and the treatment is thorough. We should like to see the authorities for some of the statements; as, for instance, that ophthalmic migraine is followed not rarely by general paresis, and that the athetoid movements persist during sleep. But whatever hasty statements this useful book may contain can be corrected in the second edition, which, doubtless, will be required in time.

GOWERS's book is too well known to need commendation and too thoroughly elaborated to invite brief criticism. The work, indeed, when complete in its second edition, will be quite encyclopædic, and far ahead in this respect of any similar treatise by one author in any language. We cannot help but think, however, that the style is needlessly diffuse. The extent of the additions may be judged by the fact that one hundred and fifty pages have been added to this first volume alone. Every part has been rewritten or retouched and brought apparently up to date. We shall refer here to a few of those chapters only in which new and debatable subjects are discussed, in order to show how our author regards some of the live questions in neurology. The chapter on multiple neuritis has been entirely recast and much enlarged. Five classes of the disease are recognized: (1) Toxic, due to a known poison in the blood, as lead, arsenic, and alcohol. (2) Toxæmic, due to some unknown virus, which is probably an organism or its chemical product, as leprosy, septicæmia, diphtheria, typhoid fever, syphilis, etc. (3) Endemic, as malaria and beri-beri. (4) Rheumatic, following exposure to cold, and

probably due also to a morbid blood-state. (5) Cachectic and senile, due to malnutrition, arterial degeneration, etc. As is seen, this classification is somewhat artificial, but it illustrates the ascendancy in the author's mind of the microbic pathology. All these groups except the last are apparently regarded as specific—there is no longer an idiopathic neuritis, just as there is no effect without a cause. This is a scientific approach to the humoral pathology. It is of great interest to note this influence on the author's mind in his purely theoretical explanation of the effects of "cold" in the so-called "rheumatic" cases, both of neuritis and of myelitis. He presupposes a morbid blood-state as the cause of the inflammation. He instances rheumatic fever, due to a similar exposure to cold, and which he thinks must depend in some way upon "the disturbing influence of the chill on the chemical or other processes within the body." Pneumonia and chorea are produced by this obscure, rheumatic, vito-chemical "humor," whatever it is, and polyneuritis, also, is among its manifestations. Finally, phthisis, which sometimes complicates multiple neuritis, is supposed to have some dependence upon the implication of the vagus—an opinion that will please the advocates of the nervous origin of phthisis. In the more practical clinical and pathological descriptions this chapter is complete to the most minute details.

The peroneal type of muscular atrophy, described by Tooth in 1886, is fully discussed in an almost entirely new section. This chronic persistent atrophy begins, as is well known, in early life, usually in the extremities, and presents features that define it sharply from other varieties of atrophy. These are symptoms of nerve-involvement, such as anæsthesia and the reactions of degeneration. The atrophy is likely to follow acute specific diseases, such as measles, and to occur in several members of the same family. Gowers believes it depends upon a slowly progressive peripheral neuritis, as has actually been found by Friedreich and by Gombault. He also thinks that there may be a congenital tendency to premature failure of nutrition in the peripheral nerve-fibres, like that which, in the pyramidal fibres, underlies hereditary ataxia. Autopsy in one case failed to show changes in the cord, but the nerves, unfortunately, were not examined.

Gowers finds that Morvan's disease is a form of syringomyelia, to which is added a peripheral neuritis; upon this neuritis the peculiar anæsthetic whitlow depends. Charcot has recently taken a somewhat similar view of this affection.

In his chapter on "Traumatic Lesions of the Cord," the author does not take a judicial position, which the question in its present state demands as well of the physician as of the court. He speaks rather slightingly of the "experts" for the railway companies, and refers by the authors' names to most of the recent papers on the subject as being "more or less instructive." His own writing on the subject, however, is to us among the least instructive. He makes the broadest possible allowance for all the subjective symptoms of so-called "spinal irritation" and "railway spine," and apparently gives the utmost credence to the tales of litigants. On the other hand, he makes no allowance for the malingering that undoubtedly complicates this important subject; in fact, he does not even mention it. The cases of organic disease, such as he cites, are easy of diagnosis and seldom, if ever, come to trial. It is the case of the "neurotic" victim, whose suffering is assuaged with a

verdict, that demands for its consideration the finest judgment and conscience of the physician. We get no light on this subject from Dr. Gowers.

New sections on "Beri-beri," "Brachial Neuritis," and "Senile Paraplegia" are worthy of note. Altogether, the second edition of this valuable treatise confirms its position as the standard book on its special subject in the language. J. H. L.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE FOR THE USE OF STUDENTS AND PRACTITIONERS. By R. C. M. PAGE, M.D. New York: William Wood & Co., 1892.

THE general plan of this work is that usual in text-books designed for the use of the student. The different systems are taken up *seriatim*, and the acute and chronic general diseases are treated of as classes.

The circulatory system is the first to be considered. In this section there are but few comments to be made, save in that portion devoted to aortic insufficiency. This valvular lesion is ranked as the least dangerous to life. With this proposition we cannot agree as to either length of years or the usefulness of the sufferer. The liability to fatty degeneration of the myocardium, to secondary mitral insufficiency, with its attendant symptoms, and to sudden death upon slight exciting causes, would cause us to place it as the lesion rather with the worst prognosis than with the least unfavorable. The author explains the liability to sudden death in cases of this disease by pressure of the enlarged left ventricle upon the coronary arteries. This explanation seems to us to be unnecessarily far-fetched when we have so potent a cause for this disaster in the failure of the aortic valve-leaflets to prevent the back-flow of the blood in the arterial system into the weakened and dilated left ventricle.

In reading the description of pneumonia one is struck by two points: one is the failure of the author to mention the delirium that is often the most prominent and misleading symptom in a case of this disease, and the other, his hearty condemnation of the use of bloodletting, aconite, and veratrum viride. He recommends the employment of tincture of digitalis in doses of three drops every three or four hours—an amount that seems to us to be too small to answer any useful purpose whatever.

The author emphasizes one point that is too often forgotten by or unknown to the general practitioner—the absolute fallacy of declaring pulmonary tuberculosis to be absent merely from the absence of the characteristic bacillus from the sputum in the early stages before breaking-down of lung-tissue has occurred. In writing of the treatment of phthisis pulmonalis the author makes no mention of the plan of treatment now generally known as the Shurly-Gibbes method, the only statement that would lead one to suppose that he had ever heard of the method being contained in the following sentence:

"Dr. J. Blake White, of this city, however, claims that his solution of chloride of gold hypodermically injected gives equally good results in many cases as Koch's tuberculin." With such results as are reported from the *complete* use of the Shurly-Gibbes method of treating pulmon-

ary tuberculosis it would seem that at least mention of the details of the use of their remedies should be made.

In the section devoted to pleurisy it is refreshing to find that the author has not adopted the present popular view of supposing that that disease is necessarily of tubercular origin in the majority of cases. In regard to the treatment of this disease the author makes no mention of the use of salicylate of sodium. This seems peculiar, inasmuch as such good results from its use are being now reported from all parts of the world, and inasmuch as the author himself states his belief that pleurisy may be due to exposure to wet and cold, although he does not directly speak of the rheumatic poison as capable of causing the lesion under consideration. In the matter of the treatment of empyema our author is rather conservative in his views as to the necessity for more extreme measures than aspiration. It will hardly be accepted as strictly true that "In the case of children aspiration alone is necessary." He recommends aspirations repeated at intervals of every five days or a week, if the fluid reaccumulate after the first tapping. In the present state of our knowledge it would seem to be a safer plan to recommend an earlier operation by the knife in case of reaccumulation, even in children. In the case of adults permanent drainage by incision and insertion of a rubber tube are advised; and, although more properly belonging to a work upon surgery, the author might have dilated somewhat upon the frequent necessity for resection of portions of one or more ribs to allow of the amount of collapse of the chest-wall necessary for the closure of the cavity.

The section devoted to diseases of the liver is probably the best in the book, being well arranged, clearly written, and concise, while not abbreviated.

Under the subject of the treatment of uræmic manifestations, the author states that bleeding is no longer practised. This statement we would deny, as this plan of treatment still holds a deservedly high place in the opinion of many able physicians, and has certainly in innumerable cases been the means of prolonging or saving life. In the treatment of uræmia he recommends the administration of an eighth to a quarter of a grain of pilocarpine dissolved in five or ten minims of Magendie's solution of morphine, or combined with veratrum viride.

The author apparently does not put much dependence upon the chemical tests for the differential diagnosis of affections of the stomach, as we find no mention of their use; and it may also be remarked in this connection that the subjects of lavage and gavage are not found among the author's methods of treatment.

There are in the section devoted to diseases of the intestines many points wherein the author differs from the views held by probably the majority of physicians at the present day. Intestinal antisepsis is not considered, in his opinion, to be of much value. In cases of suspected pus-formation in connection with disease about the head of the colon, the aspirating needle is advised as a means of diagnosis. The unnecessary risk of this procedure where pus is not found, its inutility as a means of treatment when pus is found, and the comparatively slight risk of the more radical method by incision, should have by this time convinced all men that the only course open to us in a case of suspected perityphlitic abscess that resists non-operative measures is free incision, exploration and removal of the appendix or drainage of the cavity, as may be indicated by the findings. In the treatment of diseases about

the cæcum and appendix the author absolutely, and we think unwarrantably, condemns the use of poultices and leeches as useless.

The treatment of peritonitis recommended is that of Professor Alonzo Clark, with large doses of opium. Brief mention of the treatment by salines is made, but only in reference to the pelvic peritonitis seen by the gynæcologist. Here also, as in fact in all parts of the book, the use of external means of treatment is rather scoffed at. With this view we cannot agree, for, although doubtless these are often used to the discomfort of the patient without corresponding benefit, yet we often find that such means very frequently give much comfort, and seem to have, at least, some influence in bringing about a cure.

In the matter of treatment of enteric fever the statement is made that under the expectant plan 24 per cent. of the cases die in the New York hospitals. This figure seems very high, and is certainly more so than is the usual hospital mortality under the same plan. The "Brand treatment" is described; but our author has neglected to mention what to us has seemed one of the most important details—the massage during the actual immersion in the bath. For the tympanites of enteric fever the author says that "turpentine internally is worthless, if not dangerous, and externally in the shape of stupes it is disagreeable if not absolutely useless." Our old friend, turpentine, is thus summarily condemned, although for years it has been considered a staunch aid in the hour of our most urgent need. While the use of the rational and successful treatment by cold has conferred positive benefit upon our cases of enteric fever, it has also negatively been of service in allowing us to dispense with many internal remedies that when recklessly or needlessly used doubtless frequently aided the disease in its fatal work. For turpentine, however, we have almost as much respect as for alcohol, but its use requires careful judgment and constant watchfulness.

The diseases of the blood receive a small amount of attention, but one is struck by a few points wherein the author differs from the views usually held. Quinine is strongly urged as *the* remedy in leucocythæmia, iodide of potassium and arsenic being said to be of little or no benefit. Under pernicious anæmia no mention is made of the latter drug as a means of treatment. Why this should be seems unexplainable, as arsenic is the only drug that seems to have any controlling influence whatever over this otherwise absolutely intractable disease.

The section upon nervous diseases closes the volume. It is well elaborated for a text-book of this size, and is calculated to give to the student as much information as he is capable of assimilating in this most complicated special branch of medicine.

While it may seem that the reviewer has found many points upon which to unfavorably criticise this work, it should be stated, in justice to the author, that in such a work there can be no very striking points to discuss whereby the author's work might be favorably judged, therein differing from a work appealing more to the practitioner or specialist. The many good points in the book are such as should be found in *every* student's text-book, and therefore are not mentioned by the reviewer. The points herein enumerated are the exceptions that caught the eye in reading what is in the main a very convenient, thorough, and compact text-book of the practice of medicine. F. A. P.

APPENDICITE ET PÉRITYPHLITE. By CHARLES TALAMON, Medecin de l'Hôpital Tenon. 248 pages. Paris: Rueff et Cie, 1892.
APPENDICITIS AND PERITYPHLITIS.

THIS little volume, belonging to the Charcot-Debove collection, presents in a clear and accurate form the facts, past and present, connected with the important question of inflammations in the right iliac region. The historical portion is exceedingly interesting, and this interest grows as the developments of science gradually discard old notions of typhlitis and perityphlitis for the actual appendicitis which characterizes the vast majority of these cases. Full credit is given throughout the work to the part taken by American authors in our present knowledge of these conditions. The action of bacteria in abscess formation has been well brought out. Although there is nothing absolutely new in this work, still it presents the most comprehensive and up-to-date exposition of one of the most important subjects in surgical pathology and therapeutics, giving at once the views now held by the best authorities in Europe and America, which would otherwise take much time to gather from monographs. We would heartily advise the perusal of this book by those who believe that this protean affection demands all the judgment and surgical knowledge possible for its successful treatment. E. L.

TRAITEMENT DE PLEURÉSIES PURULENTES. By G. M. DEBOVE et M. COURTOIS-SUFFIT. 228 pages. Paris: Rueff et Cie, 1892.
THE TREATMENT OF EMPYEMA.

THE present volume belongs to the same series as the preceding. It treats of empyema in three parts: 1st, "Historical," from Hippocrates to Estlander; 2d, "Methods of Operating;" 3d, the "Indications" which would call for the adoption of each particular one of these methods. The first part seems to ignore almost entirely the work done by German, English, and American authors in the progress of our knowledge of this affection. The second part tells us in a concise manner the use of the aspirator, and describes fully Estlander's operation for obliteration of the pleura. The third part is interesting, as it establishes a difference in the operative treatment according as the empyema is found by bacteriological examination to be due to the pneumococcus or to the various streptococci of suppuration. The book is an interesting monograph, which will repay anyone for reading it. E. L.

ON HARE-LIP AND CLEFT PALATE. By WILLIAM ROSE, M.B., B.S. LOND., Professor of Surgery in King's College. London: H. K. Lewis, 1892.

THE author of this book has enjoyed great opportunities for a study of the allied deformities of which it treats, both as an assistant to the late Sir William Fergusson and in his own independent fields of labor.

After an introduction dealing with general considerations, the occurrence of hare-lip and cleft palate in animals, their associated deformities,

etc., we find an excellent chapter on the anatomy and physiology of the normal palate, in which is emphasized a now recognized fact—"the frequent association of inherited mental and nervous weakness with a high arched palate."

The chapter on development is from the pen of Mr. Carless, and is one of the best expositions of the subject with which we are acquainted. After some observations, anatomical and physiological, on hare-lip and cleft palate, the author takes up the operative treatment of hare-lip. In this we find a discussion of the question as to what age constitutes the best period for operation. Mr. Rose says that the immediate operation (within two or three weeks after birth) shows a considerable mortality, while the early operation, which is done in the period from the fourth week to the third month, is entirely safe. In a series of between three hundred and four hundred cases, treated by operation between the fourth and eighth week, not one death happened as an immediate result.

In his operation the author insists on the great importance of separating the lip from the maxillæ. He freshens the edges of the cleft by a modification of the well-known method of Stokes. He sutures first with silver wire, and then obtains a finer approximation with catgut, closing carefully with this latter material both mucous and cutaneous edges.

The article on "Cleft Palate" is of great practical value, and sets forth thoroughly all the details of operation upon, and care, anæsthesia, and after-treatment of these most difficult cases.

It may be truthfully said that this book of Mr. Rose embodies the results of a vast experience, and that it combines scientific accuracy, correct observation, and lucid and practical exposition in a most unusual degree. We cannot pay it a higher compliment than to affirm that is entirely worthy of the reputation of the distinguished professor of surgery in King's College. J. C. D.

CARDIAC OUTLINES FOR CLINICAL CLERKS AND PRACTITIONERS, AND FIRST PRINCIPLES IN THE PHYSICAL EXAMINATION OF THE HEART FOR THE BEGINNER. BY WILLIAM EWART, M.D. CANTAB., F.R.C.P., Physician to St. George's Hospital, etc. With sixty-two illustrations. 8vo., pp. x., 165. New York and London: G. P. Putnam's Sons, 1892.

SINCE to fully appreciate the histological changes taking place in any organ in a state of disease it is essential that we be familiar with the structure of the organ in health, so is it none the less important to be familiar with the normal anatomical relations of an organ in order to recognize with precision any deviation from those normal relations caused by disease. It is with this idea in view that the author devotes the first portion of his book to a recital of anatomical facts, setting forth the relations of the heart to the surrounding structures and the tracing of the normal cardiac outline upon the surface of the thorax. The author has accompanied each step in the process by a graphic diagram which tends greatly to elucidate the text.

In discussing the method of cardiac percussion the author lays down some familiar, but useful, rules. In this section it is somewhat sur-

prising to note the importance which the author places upon the use of Sansom's pleximeter. While this is probably the best of artificial pleximeters it has never obtained any great favor in this country, notwithstanding the fact that Sansom himself introduced it here several years ago. At that time the Sansom pleximeter was a familiar instrument in our hospitals and dispensaries, but it was soon replaced by the more convenient and equally effective pleximeter—the finger.

In the section on cardiac auscultation the author suggests an extremely simple and very clever code of symbols to illustrate the normal heart-sounds and their pathological variations, which cannot fail to render much easier the recording of clinical histories.

The book as a whole will be found to interest the student and those desirous of definite information, succinctly told, upon a subject so important as that with which the author deals; and it offers many suggestions tending to lighten the task both of the clinical clerk and the clinician for whose use clinical notes may be recorded. T. G. A.

ON COMMON NEUROSES, OR THE NEUROTIC ELEMENT IN DISEASE AND ITS RATIONAL TREATMENT. Three Lectures delivered before the Harveian Society of London, November–December, 1891. BY JAMES FREDERICK GOODHART, M.D., F.R.C.P. LOND.

DR. GOODHART'S Harveian Lectures are full of good things well said. They are an offering to the immortals (who are always with us) who "betoken the intensity of their neurotic degradation, first by the dismal setting of their visage, and then by the minute and exaggerated description of their woes." He runs lightly over the gamut of all the viscera and evokes from it the varying tones of all the neuroses. He does not escape, as an Englishman never does, from a sense of the obligations and disadvantages imposed upon him by one of their set lectureships, and there is the suspicion of a little self-consciousness about him as though he felt he were talking against time; but his science is practical, his wisdom is clinical, and his pleasantries have that zest about them that each as it passes creates a demand and even a relish for the next before it comes.

Though a clinician were to write with the pen both of men and of angels he could not exhaust the subject of the neurotic element in disease; and yet it is quite possible that he could write too much. The danger is that he sees too much, or thinks he sees. He interprets the cry or pain amiss, and gazes only upon the image which the reality of disease projects upon the sensorium of the unfortunate patient. He may also reverse the natural order of cause and effect, and see in suffering, with its dismal plaints, a substitute rather than a sequence of disease. He certainly would do this if, with Dr. Goodhart, he were to regard floating kidney, with its worst symptoms, as colic, hæmaturia, and prostration, as one of the "common neuroses."

This is the danger. But each reader must find the fault and the remedy for himself—as doubtless he will, if he is wise, more often in practice than in books. In the meantime let him read Dr. Goodhart's lectures, for they are as a breath from the four winds, "to breathe upon these slain that they may live." J. H. L.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,
PROFESSOR OF CLINICAL MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

Insanity After the Keeley "Cure."

Dr. R. Dewey reports that eight patients have come under his care at the State Insane Hospital at Kankakee, who were committed directly after a residence at Dwight. 1. Insanity never occurred until after the Dwight treatment; a cure was effected. 2. Morphine habit; resulted in insanity after the Keeley "home treatment;" not cured of insanity. 3. Alcohol habit; sent to Kankakee Insane Hospital after treatment at Dwight; patient cured of insanity, but still drinks. 4. Alcohol, morphine, and cocaine habits; treated at Dwight, relapsed, was wildly insane; recovered mentally, but still drinks. 5. Alcohol and morphine; sent to insane hospital from Dwight; still in asylum. 6. Alcohol, morphine, and cocaine habits; took Keeley "home treatment;" sent to Kankakee Insane Hospital; not insane before going to Dwight, but received insane; discharged cured. 7. Alcohol case; insanity developed at Dwight while undergoing treatment; still in insane asylum. 8. Alcohol case; insanity developed one month after leaving Dwight; not previously insane; still in insane asylum. In each of these cases insanity resulted from the Dwight treatment. There is no doubt but that well-known tonics are combined with some narcotic and mydriatic drug, probably atropine; as to the presence of gold there is great doubt. The results that have been secured can be attributed to the expectation aroused, the "dosing" with atropine and strychnine, which destroys for a time the appetite for other stimulants or narcotics, and the mental and physical partial paralysis resulting from this treatment.—*The Medical Standard*, 1892, No. 1, p. 4.

Turpentine in Typhoid Fever.

H. C. Wood believes that when, in the convalescence of typhoid fever, the existence of local intestinal symptoms points toward slowness of heal-

ing of the ulcers, turpentine is an invaluable remedy. It is also indicated when there is marked tympanites, with dryness of the tongue, developing in the end of the second week of typhoid fever. The action of turpentine is believed to be a local one upon the ulcerated surface. The terebinthinates are slowly absorbed, and, indeed, volatilized at the temperature of the stomach and intestines, and we may readily believe, from the results of laboratory researches, that there is a special relation between the oil of turpentine and the bacillus of typhoid fever (Omelchenko). This practice has been in vogue for more than half a century, and the author believes that it is a good one, and distinctly tends to lessen the severity of the local lesions in enteric fever. The formula recommended is oil of turpentine, 1; glycerin, 4; mucilage of acacia, 6; peppermint water to 32. The dose is one tablespoonful every four hours during the day.—*Therapeutic Gazette*, 1892, No. 6, p. 366.

[This sound practice, based upon intelligent empiricism of half a century ago, has recently received support from the results of laboratory experiments, and is now placed upon a scientific basis; and it is likely to outlast many of the modern methods now so much in vogue.—R. W. W.]

The Treatment of Perityphlitis.

L. Revilliod believes in early medical, but late surgical treatment. He employs leeches, blue ointment with belladonna, small blisters, calomel and opium, either separately or combined. The use of gentle laxatives, not purgatives, of which he is very sparing, as well as of enemata, should secure one gentle passage each day. He allows the patients to choose between poultices or ice-bags, and an immovable dorsal position is insisted upon. Medical treatment has cured almost all of his cases. Of those that went on to suppuration, seven were cured spontaneously or by a later incision. When surgical measures are discussed, "in doubt, refrain."—*Revue Médicale de la Suisse Romande*, 1892, No. 6, p. 373.

A Case of Staphylococcæmia Primitiva Treated by Intra-venous Injections of Quinine.

Dr. Vittorio Stenico reports a case in which the symptoms resembled those of intermittent fever but of an irregular type. The examinations of the blood for the plasmodium developed the fact of the presence of cocci, mostly united two and two, some, however, being single. On gelatine and in agar-agar the colonies were found to be those of pyogenes albus and aureus. Inoculation and subsequent cultivation produced the same cocci, establishing the diagnosis given above, with secondary development of broncho-pneumonia. Sterilized intra-venous injections of bichloride of quinine resulted in a speedy cure. Further examination of the blood gave negative results.—*Lo Sperimentale*, 1892, No. 11, p. 208.

Abortive Treatment of Facial Erysipelas.

Dr. Ch. Talamon treats this disease by sublimated ethereal spray, taking into consideration the force of the spray, the delicacy of the skin, and the depth to which the disease has infiltrated. The strength of the solution is

one part of corrosive sublimate in one hundred parts of ether. He does not fear the blistering of the skin which may happen; the centre of the area is simply moistened, the edges and the adjacent healthy skin are thoroughly sprayed. After the operation, keep the face covered with continually moistened compresses of boric acid. Should eschars form, it is not advisable to detach them. With this method he believes that the disease can be aborted in many instances, and in others markedly shortened in duration.—*La Médecine Moderne*, 1892, No. 27, p. 429.

The Importance of Hydrochloric Acid in the Treatment of Diseases of the Stomach.

Drs. N. Reichmann and S. Mintz regard the indications for the use of this acid to be—1, anti-fermentative; 2, anti-parasitic; 3, increasing the motor functions; 4—very important—its use in the peptonization of the albuminoids. From their observations they conclude that the treatment by this acid in many cases of diminished secretion of the gastric fluids excites the production of hydrochloric acid.—*Wiener klinische Wochenschrift*, 1892, No. 25, S. 363.

The Treatment of Tuberculosis.

Dr. E. L. Shurly regards hypodermatic medication to be of the first importance, because the medicine is introduced in its pure state and undergoes no change by contact with the secretions of the stomach or intestines; besides, whatever good it does is in a selective way, and the system may get the full benefit. The substance chosen is not necessarily an animal poison, for results may be obtained by an alkaloid as well as by a colloid; he prefers iodine and chloride of gold and sodium, while admitting that other remedies may be found which will answer the purpose better. Even these are not capable of controlling the septicæmia which occurs in a large class of cases. So far as therapeutic indications are concerned there are two: one, to limit the extension of the disease, and the other to neutralize the septic material that is being generated from hour to hour in the course of the disease. There is great hope that we may achieve something in the treatment of this disease, because many of the pathological changes which take place in the lung are really conservative, constituting Nature's efforts to limit the disease. While he believes that pulmonary phthisis is essentially a local inflammatory affection, yet, general tuberculosis is a primary, general affection, and this distinction must be kept always in mind in order that we may set a true relative value upon therapeutic measures and plans.—*Transactions of the Michigan State Medical Society*, 1892.

Hypodermatic Injections of Creasote and of Guaiacol in Pulmonary Tuberculosis.

Dr. Ch. Eloy prefers the hypodermatic method of administering these remedies, because of their rapid absorption, relative tolerance, speedy appearance in the breath and even in the taste. The precautions are: 1, asepsis; 2, a graduated Pravaz syringe; 3, the dorsal thoracic (Vigeneaud and Roux), the spine of the scapula (Dujardin-Beaumetz), the infra-spinous

fossæ (Picot and Monnier), the spinal border of the scapula (Demahis), between the serratus magnus and subscapular (Cassin and Toussaint), second intercostal space (Rosenbach), sides of the abdomen (Schœtelig), exterior part of the thigh (Polyalk), retro-trochanteric groove (Pignol), or the buttocks (Anghelovici), are the regions recommended; 4, the vehicle is sterilized olive oil, or oil of sweet almonds, or liquid vaseline; 5, the method of operation is the usual one of subcutaneous injection with the addition of light centripetal massage. This treatment is advised, in the proportion of creasote twenty-five, or guaiacol ten per cent. solution, against tuberculosis in every stage, except the third—to state the question fairly, against tissues tuberculizable, not against those tuberculized. Congestion and hæmoptysis, renal lesions and pyrexia are contra-indications, but guaiacol can be used in renal disease, and, associated with eucalyptol, in congestion and hæmoptysis.—*Revue générale de Clinique et de Thérapeutique*, 1892, No. 21, p. 322.

A Plea for the Treatment of Scrofula with Creasote.

Julius Sommerbrodt, having used creasote for tuberculosis for the past five years, believes that in this drug we have a remedy for this condition as well. It can be administered to children, when pure, in milk or wine, and as well in capsules with cod-liver oil (not with balsam of tolu), and a daily dosage of more than fifteen minims is not required. Although he believes this remedy is given in too small doses, fifteen to sixty minims being a sufficient daily dose for an adult, yet the excessive doses have not been dangerous, no fatal cases having been reported.—*Berliner klinische Wochenschrift*, 1892, No. 26, S. 641.

The Action of Digitalin upon the Pulmonary Circulation.

M. Heger has experimented with amorphous digitalin dissolved in water containing a small percentage of alcohol. In a curarized dog the kymograph shows that: 1, the sphere of action of this drug is upon the left heart and the bloodvessels arising therefrom; 2, there is no direct action upon the pulmonary vessels; on the right ventricle there is a comparable effect with the left; 3, practically, so far as one can say from these experiments, digitalin is indicated in cases of cardiac weakness without valvular lesion, or in mitral insufficiency. By relieving stasis in the left ventricle it exercises a depletive influence upon the lung, in this case its action is as a "saignée du poumon."—*Bulletin de l'Académie Royale de Médecine de Belgique*, 1892, No. 5, p. 399.

The Treatment of Pneumonia.

Dr. Boardman Reed goes very carefully over the literature of this subject and concludes: 1. That water locally applied, either by wet packs or in the form of baths, after the Brand method, is the most efficient single remedy or therapeutic measure for acute pneumonia. 2. That either veratrum viride or aconite can accomplish more than any other single drug in the first stage, and that the same is true of digitalis in the second stage. 3. That a combination of one of these cardiac sedatives with opium and diaphoretics affords

not only a safe but an eminently successful internal treatment for the first stage of acute pneumonia, being capable of aborting the disease when its administration is begun near the onset and is repeated at short intervals day and night. 4. That venesection, though a most efficient means of treating sthenic forms of pneumonia, and, judiciously employed, considerably more successful than any merely expectant method, is no longer an indispensable resource in managing the disease, since other remedies have been found to accomplish the same results more surely and pleasantly.—*Therapeutic Gazette*, 1892, No. 3, p. 166, and No. 4, p. 228.

The Treatment of Pleurisy.

M. Trasbot contributes a very interesting paper to the discussion at the French Academy of Medicine, treating the subject from the standpoint of the veterinarian. He concludes that: 1. The sero-fibrous pleurisy of animals has nothing in common with tuberculosis. 2. Frequently the relation between its development and chilling is indisputable. 3. It is impossible to liken the sero-fibrinous pleurisy of the horse to an eruptive fever or to a cyclic disease. 4. Antiphlogistic medication and derivative applications surely exercise an advantageous action. 5. Thoracentesis can be done without danger to the horse, and constitutes a measure to which we may have recourse before the effusion gives rise to asphyxia.—*L'Abeille Médicale*, 1892, No. 27, p. 209.

On Posture and its Indications.

Dr. T. Lauder Brunton gives some illustrations of the different positions assumed in health and disease and some practical deductions therefrom. In cases where the circulation is weak and syncope is threatened, one can place the head between the knees, the patient being in a sitting position. He illustrates the positions assumed to favor the loss of heat and to guard against it. The physiological explanation for the upright position assumed in dyspnœa, the choice of the right side for patients suffering from cardiac disease, and the necessity for turning feeble persons upon their left side to allow of the escape of gas by way of the œsophagus are all cited and the explanations given.—*Lancet*, 1892, No. 3592, p. 12.

Results Obtained by Suspension in Tabes Dorsalis.

Dr. Bonjour has faithfully recorded his observations made at the Clinic for Internal Medicine at Zurich, eighteen patients having been treated. In *résumé*, suspension has frequently diminished the ataxia, Romberg's symptom, and the pains, if not permanently, at least for some hours and even days. Several patients could walk better after several suspensions. The ocular and bladder symptoms were not improved. Only once did the patellar tendon reflex reappear. Although these improvements are minor ones, yet this could not be regarded as a reason for abandoning the treatment. A careful study of his tabulated cases shows that the general condition improved. On the whole, the report is favorable.—*Revue Médicale de la Suisse Romande*, 1892, No. 6, p. 354.

The Treatment of Certain Cases of Subacute Cystitis by Retinol and Salol.

Dr. E. Desnos believes that retinol, a white, oily liquid obtained from colophone [colophony; Resina, U. S. P.] by distillation, possesses antiseptic properties. In this liquid, he dissolves salol in the proportion of 5 to 10 per cent., 6 per cent. being the strength usually selected. He uses this remedy when stronger ones are not well borne, the amount varying from one to eight fluidrachms. The peculiarity of this remedy is that it will remain in the bladder even after six or eight urinations. It has no hæmostatic properties, it presents no danger, and it has produced speedy relief in cases rebellious to other remedies.—*Revue gênérale de Chirurgie et de Thérapeutique*, 1892, No. 22, p. 339.

Hay Asthma.

Dr. Edward S. Blair has treated a girl of ten years, who for one-half of her life had been subject to annual attacks of this disease. Under the use of potassium iodide and grindelia robusta there were slight catarrhal symptoms, but on lying down marked wheezing and dyspnœa. These symptoms were checked entirely by the fluid extract of euphorbia pilulifera [dose not stated], and the relief of these symptoms were followed by a marked increase in flesh and strength.—*Therapeutic Gazette*, 1892, No. 3, p. 156.

The Influence of Antipyretics in the Elimination of Sulphuric Ethers in the Urine.

Dr. Alberto Rovighi concludes that antipyrine, acetanilide, phenacetine, and hydrochloride of phenocoll, in doses of twenty to thirty grains daily for two or three days, markedly increase the ethers in the urine; with this increase of combined sulphuric acid there is a diminution of the preformed acid. Antipyrine (dose being equal) produces a smaller increase, while acetanilide or phenocoll produce a more marked modification of the elimination. A few days after these experiments one finds in healthy and in febrile subjects a manifest diminution of the normal sulphuric ethers in the urine, and this is especially marked after acetanilide.—*La Riforma Medica*, 1892, No. 35, p. 711.

The Action of Salipyrine.

Dr. Richard Hitschmann, from a clinical observation, concludes that, as an antipyretic, salipyrine either entirely failed or was not constant in its action. As a remedy for rheumatism, even when the joints first affected improved, other joints were frequently invaded or there were relapses. In influenza the headache and pains in the limbs were improved, but it was not a specific. As an anti-neuralgic he obtained better results with this drug. In these cases a dose of seven to fifteen grains is necessary, and may be repeated at one-quarter to one hour intervals. In one instance ninety grains were administered in ten hours. The unpleasant results are sweating, exanthemata, gastric disturbances, irregularity of pulse, collapse, and dyspnœa. It

is in many cases a useful remedy, but to obtain a certain result large doses are necessary, which are likely to give rise to sweating or digestive symptoms, so that one cannot predict its extensive employment.—*Zeitschrift für Therapie*, 1892, No. 12, S. 91.

Salipyrine.

Dr. Taberlet has used this remedy for seven months. The results are more decisive than with antipyrine or the salicylates, excepting in neuralgias of malarial origin, where he has had two failures. The remedy can be easily taken, since it is without taste or odor, nor does it disturb the appetite. In his hands it has presented no disadvantages, nor has it affected the hearing. It works promptly and efficiently. It has not been used, however, in acute rheumatic conditions. — *Gazette hebdomadaire de Médicine et de Chirurgie*, 1892, No. 27, p. 318.

Asaprol.

Dr. Stackler has carefully studied this remedy, which is β-naphthol and monosulphate of calcium, pure and anhydrous, soluble in one and a half parts of distilled water and in about three of alcohol. For general antisepsis solubility is an important quality, but for intestinal remedies, when the stay should be as long as is possible, insolubility is certainly an advantage. In adding the sulphur salt to the naphthol, its antiseptic power is decreased, but in much greater ratio is its poisonous quality lessened. In two cases of influenza treated by this remedy the value of it was well established, the fever and pains disappeared more rapidly than with antipyrine and quinine. It has also been strongly recommended for the different forms of acute rheumatism.—*Bulletin général de Thérapeutique*, 1892, No. 22, p. 497.

Pambatanos.

Dr. H. Baillou has recognized this drug, which has recently excited considerable interest, as the root of the Calliandra Houstoni (Nat. Ord., *Leguminosæ*), habitat, Mexico. It is supposed to be tonic, stomachic, and astringent, and has been used with considerable success in many kinds of paroxysmal fevers, especially of benign forms, and in light although sometimes very persistent paludal attacks. The plant does not contain any alkaloids, but a tannin of a very astringent quality, and possessing the peculiar characteristic of early turning red in contact with the air. It is not likely that this remedy can replace cinchona or its alkaloids in treating intermittent and pernicious malarious fevers, but since it can be cultivated on the shores of the Gulf of Mexico, in the Carolinas and Georgia, in case it should prove to be useful, a sufficient supply would always be assured.—*Merck's Bulletin*, 1892, No. 5, p. 252.

Kola-nut.

Dr. Blanc quotes the opinion of Monnet that kola, through its caffeine (2.348 per cent.) and its theobromine (0.02 per cent.) is a cardiac tonic, accelerating its beats, increasing its dynamic force and regulating its contractions.

In the second stage of its action, as with digitalis, pulsations become broader and less numerous. As a corollary of this action upon the blood-pressure, the diuresis is increased, and thus it can be utilized for the treatment of diseases of the heart that result in dropsy. As an agent that protects against waste, it diminishes the urea that results from the combustion of nitrogenous substances, probably in exercising an especial action upon the nervous system. It is a powerful tonic, useful in anæmia, debilitating chronic diseases, and in convalescence from severe illness. It aids digestion, increases the secretion of the gastric fluids, and acts upon the muscular wall of the stomach. It is also valuable in chronic diarrhœa, in certain cases of sporadic cholera, without, however, a physiological explanation for its action. Huchard has found it of great value in convalescence from epidemic influenza, when there is persistent neurasthenia and muscular weakness. It is valuable as a cerebral tonic in the cases of that condition which is especially that of the *fin de siècle*, cerebral neurasthenia.—*Revue de Thérapeutique Médico-chirurgicale*, 1892, No. 10, p. 272.

[During the use of this remedy, administered to patients convalescing from epidemic influenza, and during the progress of certain pneumonias both fibrinous and catarrhal, it was found that the night dose must be omitted and sometimes the drug abandoned altogether, because of the persistent wakefulness to which it gave rise.—R. W. W.]

Hydriodic Acid in Special Practice.

Dr. J. Hobart Egbert, in a practice limited to diseases of the eyes, ears, nose, and throat, has obtained good results with this remedy. Although the iodides are very diffusible and are rapidly excreted, yet they are irritant, unstable, and offensive to the taste and the stomach; they frequently cause violent coryza, with soreness of throat and eyes, headache, profuse mucous discharge, and renal irritation. Their protracted use leads to anæmia, emaciation, and general vital depression. He believes that these disadvantages can be reduced to the minimum by use of the syrup of hydriodic acid, which has a pleasant acidulous taste, can be advantageously combined with the vegetable tinctures and syrups, and contains a definite amount of absolute hydriodic acid; that is to say, each fluidrachm contains as much iodide as five grains of the iodide of potassium.—*Notes on New Remedies*, 1892, No. 1, p. 1.

The Elimination of Creasote by the Urine.

Imbert has found that creasote breaks up in the body and is eliminated in the urine as a guaiacol sulphate and creasote-sulphate of potassium. When injected subcutaneously it is rapidly eliminated in the urine, and in large quantity. So far as the expectoration is concerned, it is eliminated very feebly, and it completely disappears from it before the kidneys have finished their work. He has also determined that the absorption from the rectum is active and rapid, but it makes only a very slight appearance in the expectoration for the first twelve hours after administration, and not at all afterward. By the kidneys, it is almost completely eliminated at the end of twelve hours. In comparing the amount eliminated by the kidneys after subcutaneous in-

jection and that after rectal injection, it does not appear that the former method presents any advantages; on the other hand, in the latter instance more creasote is excreted by the kidneys, and this method is certainly the more practical. However much of the material has been used, the elimination is practically at an end in twelve hours, therefore repeated doses are to be recommended instead of infrequent massive ones, but, however administered, the elimination by the lungs is very slight.—*Bulletin général de Thérapeutique*, 1892, No. 22, p. 491.

The Decomposition of Salol in the Intestines of Dogs after Removal of the Pancreas.

M. E. Gley, being familiar with the conclusions of Lépine, that the appearance of salicylic acid in the urine would give valuable information as to the condition of the pancreatic functions, has investigated the subject in a novel manner. Kobert having determined that naphthalol (salicylic acid and β-naphthol) is decomposed by the ferments which the mucous membrane of the small intestine or cæcum secrete, the question at once arose whether salol (salicylic acid and phenol) might not be decomposed by the same means. The experiments upon two dogs, the pancreas being removed, showed that the reaction of salicylic acid was found in the urine as soon, as energetically, and persistently for almost as long a time as in the urine of a dog kept for control. He also determined the fact that this decomposition of salol does not take place in fasting dogs.—*Comptes-rend. hebd. des Séances de la Société de Biologie*, 1892, No. 14, p. 298.

The Use of Salicylate of Soda for Sprains.

M. Labbée, without claiming any priority, spoke briefly at a meeting of the Société de Thérapeutique of the markedly satisfactory result which he had obtained by the use of one drachm of this remedy in twenty-four hours for a tibio-tarsal sprain. The following morning there was no pain, and in four days there was complete cure. His results were equally good in several cases, whether or not the rheumatic or arthritic diathesis was present.—*La Semaine Médicale*, 1892, No. 30, p. 237.

Light as a Therapeutic Agent.

Dr. A. Barry Blacker and Mr. R. H. Clarke have made a study of the methods carried out at the establishment of Dr. Rikli, at Veldes, where chronic diseases are treated by means of light, air, and water-baths, and attention to diet and exercise. Although the treatment as described is rough, primitive, and one might say almost barbarous, yet it affords an opportunity to ascertain the effects of sunlight and sun-heat. Separating the effects of light from heat, they conclude that the actinic rays excite the peripheral nerves, and, in moderation, stimulate nutrition and vitality; in excess, they produce various degrees of superficial injury and reflex irritation of other parts, and ultimately involve the nervous centres. The chemical rays of certain intensity cause a deposit of black or yellow pigment in exposed parts as a protection from injurious effects, and this protection must be very important to the

organism, as considerable penalties are incurred in order to secure it. These considerations suggest that the more or less prolonged application of bright sunlight, and possibly of electric light also, to the whole surface of the body, might with advantage be employed to stimulate the nervous system generally, or possibly for some specific effect in special cases.—*The Practitioner*, 1892, No. 286, p. 272, and No. 287, p. 335.

Notes on Eucalyptus Oils.

Mr. T. H. Maiden classifies the different species of eucalyptus that yield oils into—(1) scented oils, from E. Baileyana, dealbata, maculata, Staigeriana; (2) mallee oils ["mallee," an aboriginal word applied to dwarf eucalypti], from E. dumosa, gracilis, oleosa, incrassata, pyriformis, uncinata; (3) other oils, from E. amygdalina, globulus, goniocalyx, hæmastoma, mitrocorys, piperita, Planchoniana, papulifolia, rudis, solabris. The active principle of all oils is *eucalyptol* (Aneol), $C_{10}H_{18}O$; specific gravity, 0.930. One mallee oil is so rich in eucalyptol that in a freezing mixture it solidifies to a pasty mass. The eucalyptus oil is obtained from the leaves only, and frequent cutting of the branches of the gum-trees causes the fresh growth of young leaves to spring forth. The young leaves contain oil in greater quantity and of better quality than old ones. The wood contains no essential oil.—*The Pharmaceutical Journal of Australasia*, 1892, No. 5, p. 23.

[This communication possesses especial interest now that a controversy is being carried on, in that it is the testimony of a local observer.—R. W. W.]

Sarsaparilla.

Prof. R. Kobert has investigated the three active glucosides of this drug: 1. Parillin, $C_{26}H_{44}O_{10} + 2\frac{1}{2}H_2O$. 2. Saponin, $5(C_{20}H_{32}O_{10} + 2\frac{1}{2}H_2O)$. 3. Sarsasaponin, $12(C_{22}H_{36}O_{10}+2H_2O)$. From his experiments he concludes that if there is a specific action for this remedy, the principal part of its activity resides in the sarsasaponin. However, he believes that it would be of great advantage to be able to say whether sarsaparilla, and particularly sarsasaponin, is an incomparable remedy for syphilis; if it is a remedy for syphilis, whether cheaper derivatives of saponin cannot be substituted for it; or whether sarsaparilla has any importance in the treatment of syphilis.—*Deutsche medicinische Wochenschrift*, 1892, No. 26, S. 601.

Poisoning by Water of Javal.

M. E. Potier reports a fatal case when the amount swallowed was probably about two quarts. The symptoms of which the patient complained were burning sensations in the throat, epigastrium, and abdomen; death followed in eight hours. The necropsy showed: The epithelium of the tongue was denuded, and it was of a dark color, the papillæ being strongly marked; the pharynx and œsophagus presented the same appearance, the lesions, however, were superficial and only in the epithelial layer. The vestibule of the larynx was congested and red, but there was not any œdema of the vocal cords. There was marked distention of the intestines, and they were strikingly pale.

The mucous membrane of the stomach was œdematous, but pale and thinned. The intestine was likewise thin, especially in the cæcum; the ileo-cæcal valve was healthy. The liver was of normal volume and consistence, but anæmic, as was the intestine, and no blood flowed upon section. The kidneys were slightly congested. Nothing abnormal was found in the heart or lungs. The chlorine of the Javal water was probably the cause of the poisoning. The reporter questions whether its action upon the hæmoglobin was the cause of the speedy death. It was worthy of remark that the lesion had extended over a very large surface of the digestive tract.—*Bulletin de la Société Anatomique de Paris*, 1892, No. 14, p. 381.

The Treatment of the Uric-acid Condition.

Dr. James Wood, believing that the presence of an abnormal quantity of this acid in the renal excretion shows a condition of suboxidation of the nitrogenous elements of the food-stuffs, and the absorption of the products of but partial oxidation leads to a profound state of malnutrition, with all its accompanying symptoms and sequelæ, feels the management of these cases to be of great practical importance. His treatment is as follows:

1. Excretion of all kinds must be thoroughly stimulated, and the refuse taken from the body by cathartics, sudorifics, diuretics, etc. 2. Selection of a diet which can be completely oxidized into its final products, and which will give the body sufficient energy to sustain it in its vital action. Skimmed milk should be exclusively used until the urine shows that the percentage of uric acid is nearly normal, and the cravings for solid food becomes unbearable. This may require from four to eight weeks. 3. Next, selection of those food-stuffs which will give us the requisite amount of albuminous principles to meet katabolism, or bodily waste, combined with sufficient of the carbohydrates to keep up the needed supply of energy. The proportion between the two great food classes should be as one to one; the daily amount varies with environment and amount of exercise, generally from ten to sixteen ounces of pure nutritious elements.—*Merck's Bulletin*, 1892, No. 5, p. 239.

The Treatment of Alopecia.

Dr. H. Paschkis divides this disease into two classes for the purpose of treatment. When this condition is due to seborrhœa he recommends washing the head with alkaline soaps, specifying a liquid soap with the addition of 1 per cent. of carbonate of potash. For permanent removal of the oily matters, coal-tar-benzine with twice its weight of absolute alcohol, but this must be used only by daylight. Occasionally an alcoholic solution of resorcin, 1:30, with a small amount of castor oil, is advisable, as well as the naphthol soaps now to be found at the apothecaries. Of late years he has used 10 to 20 per cent. of ichthyol in lanolin; this, however, must be preceded by an energetic washing with soap.

Sometimes the daily use of alcoholic preparations of tannin and quinine are useful; such preparations are often found in the shops. Although the treatment is likely to be prolonged, yet the prognosis is generally favorable. The cases where there are scale-formation, pityriasis, or scanty secretion of the sebaceous follicles, are more difficult to treat. Here the washing with

soaps has no place, but oils and pomades are required. Here, also, are used stimulating remedies of 4 to 6 per cent. alcoholic solutions of tincture of cantharides, oil of savine, tincture of capsicum, or tincture of hellebore, either daily or three times weekly. If this condition is accompanied with hyperidrosis, then local faradization and reconstructive remedies, as iron or arsenic, are required.

The cases of trichorrhexis nodosa are entirely unsatisfactory from the standpoint of therapeutics, although sometimes pilocarpine, both locally and internally, may be of service. Alopecia areata apparently is spontaneously cured, quite as often as by remedies, although usually disinfectants and irritants are prescribed.—*Centralblatt für die gesammte Therapie*, 1892, No. 6, S. 321.

The Treatment of Acute Tonsillitis.

Dr. Ch. Eloy, believing that acute tonsillitis is of microbian origin, contagious and as well infectious, strongly insists upon disinfection of the mouth, destruction of enlarged tonsils by ignipuncture to close the avenues of infection, and in the segregation of those predisposed to this disease. Isolation, then, is social prophylaxis. He practises internal antisepsis by salol, salicylates, naphthol, to prevent infection; or, if it have already occurred, to combat it. The diet is regulated, tonics and antipyretics are ordered, not only to modify the symptoms but as well to place the organism in the best possible condition of defence against the invading microbes.—*Revue générale de Clinique et de Thérapeutique*, 1892, No. 19, p. 291.

A Case of Cerebral Syphilis.

Prof. E. de Renzi reports a case of cerebral syphilis, localized in the pons (left facial and right corporeal paralysis, left palatal and œsophageal paralysis). A man of forty-three years, disease of nine months' duration; roseola and nocturnal headache for five months; slight paralysis of right side three months previously, which had recovered under iodide of potassium. The present symptoms came on suddenly; the voice was changed and deglutition became impossible. The urine contained ten times the normal amount of acetone. After daily injections of one-sixth of a grain of corrosive sublimate there was marked improvement; he could take food without the use of an œsophageal tube; the paralysis had greatly improved. —*Gazetta degli Ospitali*, 1892, No. 72, p. 671.

The following papers are worthy of mention:

"Two Cases of Diabetes Mellitus, Treated by Syzygium Jambolaum," by Dr. Wold. Gerlach, in *St. Petersburger medicinische Wochenschrift*, 1892, No. 19, S. 181. Report unfavorable.

"The Treatment of Diphtheria," by Dr. S. Swartz, in *Internationale klinische Rundschau*, 1892, No. 21, S. 850. Recommends insufflation every four hours of one part sodium sozoiodol with four parts of flowers of sulphur.

"The Dietetic Treatment of Diseases of the Stomach," by Dr. Emmerich

HERTZKA, in *Wiener medizinische Presse*, 1892, No. 25, S. 1003. A carefully written and instructive paper.

"The Treatment of Facial Acne," by DR. ALEX. RENAULT, *Revue générale de Clinique et de Thérapeutique*, 1892, No. 23, p. 353. A careful paper, thoroughly studying both local and general measures.

"Anæsthesia," by DR. W. M. L. COPLIN, *Therapeutic Gazette*, 1892, No. 6, p. 370. A brief, practical, and scientific paper, which should be carefully read by the junior assistant house surgeons.

"The Curative Property of the Electric Current," by DR. MAX WEISS, *Centralblatt für die gesammte Therapie*, 1892, Heft 7, S. 385, claims a broad field of disease for its use.

"Two Cases of Chronic Alcoholic Hepatitis, Followed by Cure," by DR. FRÉMONT, *L'Union Médicale*, 1892, No. 70, p. 833. These cases give a better prognosis to this condition.

"The Treatment of Tabes," by PROF. LEYDEN, *L'Union Médicale*, 1892, No. 68, p. 805; No. 71, p. 841. A carefully written paper.

"The Destruction of Morphine in the Animal Organism," by PROF. P. PELLACANI, *La Rassegna di Scienze Mediche*, 1892, No. 5, p. 197.

MEDICINE.

UNDER THE CHARGE OF

W. PASTEUR, M.D. LOND., F.R.C.P.,

ASSISTANT PHYSICIAN TO THE MIDDLESEX HOSPITAL; PHYSICIAN TO THE NORTHEASTERN HOSPITAL FOR CHILDREN;

AND

SOLOMON SOLIS-COHEN, A.M., M.D.,

PROFESSOR OF CLINICAL MEDICINE AND APPLIED THERAPEUTICS IN THE PHILADELPHIA POLYCLINIC; PHYSICIAN TO THE PHILADELPHIA HOSPITAL.

ORIGIN AND SEAT OF EPILEPTIC DISTURBANCE.

VICTOR HORSLEY limits his remarks to idiopathic or general epilepsy, convulsions of children, reflex epilepsy, etc., as distinguished from Jacksonian epilepsy and hystero-epilepsy.

The phenomena which mark an attack (without aura) of this kind are: 1, semi-voluntary movement—*e. g.*, rising into a standing posture; 2, change in respiration, inspiratory spasm with cry and commencing asphyxia; 3, in the worst cases with loss of consciousness (instantaneous); 4, muscular spasms (tonic stage); 5, muscular spasms (clonic stage); 6, exhaustion.

Loss of consciousness. The observations of Strümpell and the extirpation experiments of Goltz show that the cerebral hemispheres are the essential regions which contribute to the conscious state. This warrants the assumption that loss of consciousness must be brought about by some agency which abrogates the functional activity of the cortex cerebri. Such agency may be

extrinsic (*e. g.*, action of a narcotic poison through the circulation on the elements of the nerve centres from the outside so as to paralyze their activity), or intrinsic, as when (*e. g.*, in the hypnotic state) suitable stimulation of the optic or auditory (sensory) nerves may very profoundly depress the functional activity of the cortex cerebri. At present the only thing we know that would produce such a condition is, as just stated, a strong afferent excitation. It has been the fashion to attribute the loss of consciousness to extrinsic agencies, and the most remarkable assertions have been made as to the ability of the circulation to produce the effect in question. It should be borne in mind that the experiments of Kussmaul and Tenner, upon which so much stress has been laid in this connection, involved not merely anæmia as a cause of the convulsions, but also asphyxia, since the effect of the ligatures was to cut off the nutrition of the respiratory centre. A yet more fundamental criticism which should be applied to these experiments is that the convulsions they evoked are of a quite different type to those of the general or so-called idiopathic epilepsy.

The argument in favor of cortical anæmia drawn from the pallor of the face is shown to be worthless. Experimental results point strongly in the opposite direction. In a large number of epileptic fits induced in monkeys by injecting essence of absinthe, the cortex became hyperæmic. These observations have been confirmed and extended by Todoesky. In a patient of Horsley's, who had an epileptic fit during an operation in which the "motor" area was exposed, this became distinctly hyperæmic during the attack. These facts prove that there is no ground for the gratuitous clinical assumption that the brain is anæmic.

Does the agency which produces the epileptic fit strike the whole of the neural axis at once, or only one part of it?

When absinthe is injected after complete division of the spinal cord no fit can be evoked from the centres below the section, thus proving that although in the complete attack the spinal nerve centres are being used at least as conductors, if not participators, they, nevertheless, have no power when irritated by absinthe of initiating the convulsion, and it becomes, therefore, a definite conclusion that somewhere in the encephalon must be the starting-point of the fit. In which part of the encephalon cannot at present be answered positively. But we are justified in concluding that even if they be not the starting-point of the convulsions, the hemispheres, that is, their cortical mantle, are affected very early in the convulsion, and in many cases where loss of consciousness and, consequently, the fall, are the initial symptoms it is clear that the epileptogenous agent, if it does not commence its action therein, at least attacks the cortex at the same time as it does other parts.

Next, as regards the changes in respiration and phonation, it is to be remembered that both these functions are now known to have extensive cortical representation, so that their disturbance is not necessarily an indication of changes in the medulla oblongata.

Muscular spasms. The order of events, as far as the muscles are concerned, is tonus, followed by clonus. The question arises: What nerve centres in the neural axis are capable, when excited by any kind of agency, of producing this definite effect of tonus followed by clonus? In the vast majority of

instances faradic stimulation of the spinal cord or bulb produces in the main a tetanic contraction, and in the vast majority of cases it is not followed, when the excitation is left off, by any clonic stage. On the authority of all observers the nerve centres, in the basal ganglia, the mid-brain, and the cerebellum may also be excluded. On the other hand, electrical excitation of the cortex in the so-called motor region has, in the hands of most observers, evoked this characteristic tonus followed by clonus. A knowledge of the kind of impulses which come down along the spinal cord during a fit is, however, still required to enable one to determine whether the tonus-clonus sequence is due to the encephalic centres, or whether the spinal centres are not exerting their influence as well. By recording the "action currents" by means of an electrometer, Gotch and Horsley have shown that the impulses which the cortex delivers and sends down the cord are of the characteristic form of tonus followed by clonus, thus proving that the "motor" part of the epileptic disturbance is seated in the cortex of the hemispheres. To sum up: "Whatever be the point which the epileptogenous agency first attacks, we must conclude that the principal seat of the disturbance of a general or idiopathic fit must be the cerebral hemispheres, and especially their cortical mantle. Further, that the condition of the cortex during an attack is one of congestion and not anæmia; and, finally, that in all probability this portion of the encephalon is actually the place of origin of the disturbance."—*British Medical Journal*, 1892, No. 1631.

The Urine in Phthisis.

Dr. W. Hale White describes (*British Medical Journal*, 1892, No. 1638) the following conditions in the urine of phthisical patients: In seven out of nine urines examined the urine remained acid a very long time. In 182 specimens examined only 36 remained acid less than five days and 4 remained acid for over one hundred days. All the urines were left at the temperature of the ward and freely exposed to the air at first.

The sediment which formed in the acid urines consisted of amorphous urates and abundance of uric-acid crystals. If it had remained acid some time abundance of yeast-like organisms could be found in it, but very few bacilli. The change is, therefore, in many respects the same as that described as acid fermentation. Most urines developed a peculiar smell not unlike that detected in sewage-purification works.

Many of the acid urines became darker and darker, becoming eventually black when seen in bulk, though only dark-brown when in thin layers. This change usually took a month or more; once black, the urine remained so, even if kept for nearly a year. The cause of the darkening is obscure; it is not, however, due to pyrocatechin.

These peculiarities could not be connected with any symptom observed during life or with any post-mortem change. None of the patients who died had any local disease of the genito-urinary tract. The condition of the urine was not related to any particular drug or diet. It seems most probable that these pecularities of the urine are due to the excretion in that fluid of some of the direct or indirect products of the action of the tubercle bacilli.

Rötheln.

Dr. Wm. Johnstone Fyffe records (*Bristol Medical and Chirurgical Journal*, 1892, vol. x., No. 35) an outbreak of rötheln which occurred last summer at Clifton College. Out of a total of 91 cases there were 13 in which a secondary scarlet rash developed and was followed by general desquamation. In 7 of these the primary rash had all the characters of the simple rötheln eruption, and the secondary rash, which developed at a period varying from two to six days after the first, was so like that of scarlatina as scarcely to be distinguished from it. Five other cases exhibited the scarlet rash from the beginning without any preliminary pink rash. The patients were seen by several medical men in consultation, of whom the majority were agreed that they were not scarlatinal.

Fyffe gives the following reasons in favor of the diagnosis of rubeola scarlatinosa as against scarlatina:

1. There were no cases of scarlet fever in the school or in the neighborhood.

2. The clinical features, on careful analysis, differed from those of scarlatina.

The prodromata were so very short as not to be noticeable.

3. The throat symptoms were not severe in comparison with the prominence of the rash. There was general faucial redness, but very little swelling of tonsils.

4. Not one case exhibited the typical strawberry tongue of scarlatina.

5. There was no glandular implication beyond some tenderness of the post-cervical glands behind the sterno-mastoid.

6. The rash, although bright scarlet, had more of the uniform velvety look of erythema than the punctate rash of scarlatina.

7. There was an entire want of all proportion between the intensity of the cutaneous rash and the general condition of the patients.

8. In not a single case was there any kind of kidney complication.

9. In no instance was the disease carried further afield.

On the other hand, the desquamation in the severer cases was flaky and marked on the hands and soles, but some of the patients did not peel at all.

A Case of Osteitis Deformans—Paget's Disease.

Moizard and Bourges (*Archives de Méd. expér. et d'Anat. pathol.*, 1892, No. 4, p. 479) has reported the case of a man, seventy-three years old, in whom, after a contusion of the left leg, at the age of twenty-one, the corresponding tibia began to curve forward and to increase in size. At the age of sixty-nine the man fractured his right tibia, which then underwent a change like that of its fellow, but more pronounced. For eighteen months there had been loss of appetite with frequent vomiting, but never hæmatemesis. The patient had always been spare. The skin was straw-colored. The deformity of the lower extremities was striking. The crests of the tibiæ were hypertrophied and strongly curved forward, while the calf-muscles were wasted. The shafts rather than the epiphyses of the bones seemed to be involved. The lower third of the right femur was larger than the corresponding portion of the left femur. Both clavicles were enlarged. The patient was habitually

constipated, but no abdominal tumor could be detected on palpation. Micturition was frequent, difficult and painful. The urine contained pus. Finally, the patient was seized with a violent chill, followed by elevation of temperature and anuria, and death took place.

At the autopsy the pylorus was found to be narrowed by an annular epithelioma, and there was bilateral purulent nephritis. The left tibia was strongly curved forward; its crest had disappeared and had been replaced by a flat surface presenting elevations and depressions, particularly at the middle of the bone; the external surface of the bone presented a deep, longitudinal depression. The greater part of the bone was enlarged. The left fibula was slightly increased in size, but unaltered in shape. The bones of the right leg presented the evidences of previous fracture. The upper half of the tibia was curved forward and inward, the lower half backward. The crest was obliterated and the external aspect of the bone presented a short depression. The superior third of the right fibula was enlarged. Only the inferior third of the left femur was enlarged. The left clavicle was larger than the right. Sections of macerated pieces of bone displayed a condition of mixed rarefaction and condensation.

A Streptococcus in the Blood in Scarlatina.

D'Espine and De Marignac (*Archives de Méd. expér. et d'Anat. pathol.*, 1892, No. 4, p. 458) have reported the case of a man twenty-six years old, in which Chopart's amputation was performed on account of a crush of the foot. The wound failed to heal, and after the lapse of two months was curetted. On the following day the patient had a chill, followed by fever and sweating, and a day later a pultaceous angina. In the course of three days more a typical scarlatinal eruption appeared, attended with albuminuria. In the second week general desquamation took place and continued for several weeks. The wound healed and the patient recovered. While the eruption was present the blood was examined, with the result of finding present a long, flexuous streptococcus, differing in culture and by inoculation from the ordinary forms of streptococci.

The Determination of the Specific Gravity of the Blood.

Hammerschlag (*Zeitschr. für klin. Medicin*, 1892, Bd. xx., H. 4–6, p. 444) recommends the following method for the determination of the specific gravity of the blood or of other fluid of which it is desirable or essential to use small quantities: A drop of the fluid under investigation is placed in a mixture of benzol and chloroform, the proportions of which vary with the specific gravity of that of the fluid tested. A beaker glass about four inches high and two inches in diameter is half-filled with the mixture of benzol and chloroform, and into this, carefully shaken, is introduced the drop of blood obtained by puncture. If the blood has a higher specific gravity than the mixture, the former will sink to the bottom, and chloroform is to be carefully added until the drop floats. If, on the other hand, the blood rises to the surface of the mixture, the former has a lower specific gravity, and benzol is to be added until the drop floats. The mixture, minus the drop of blood,

is now poured into another vessel. The specific gravity, taken with an ordinary aërometer, will be that of the blood. It is important that the chloroform and benzol be thoroughly mixed, but care is to be taken that the drop of blood be not broken up. Observations upon forty adults by this method gave an average specific gravity of 1.0605 for males and a little lower for females. It was determined that when the specific gravity fell as low as 1.045, the proportion of hemoglobin was less than 50 per cent. The ingestion of large quantities of water was followed by a transitory lowering of the specific gravity, while copious perspiration was followed by an elevation. It was found that changes in the specific gravity of the blood corresponded with variations in the proportion of hemoglobin.

Unilateral Syringomyelia.

Déjérine and Soltas (*Compt.-rend. hebd. des Séances de la Soc. de Biologie*, 1892, No. 28, p. 716) have recorded the case of a man, sixty years old, who, seven years previously, had noticed weakness in the right upper extremity, to which, two years later, muscular wasting was added, progressing to such a degree that he was compelled, four years later, to give up his work as a mixer of colors, into the composition of some of which arsenic entered. During two years the patient had several times burned himself with his pipe without suffering pain. He presented a cervico-dorsal kyphosis. The muscles of the hand, of the distal half of the forearm, and the brachialis on the right, were atrophied. The first phalanges were extended, the second flexed and the last semi-flexed. Fibrillary contractions were wanting. Motility was impaired in correspondence with the degree and extent of muscular atrophy. Tactile sensibility was everywhere found preserved. Thermic sensibility was lessened in all parts of the body, except upon the head, face, and neck; while both thermic sensibility and the sensibility to pain were abolished throughout the entire right upper extremity and the adjacent portions of the trunk, anteriorly and posteriorly. Cutaneous trophic changes were absent. The muscular sense was intact. The knee-jerks were slightly exaggerated. The elbow-jerk was abolished on the right, but preserved on the left. Smell, taste, and hearing were intact. There was concentric limitation of the visual fields, the more pronounced for colors. The sphincters were continent. A diagnosis of unilateral syringomyelia was made. During the twenty-one months that the patient was under observation the muscular atrophy made little progress, while the sensibility remained unchanged. Death took place as the result of intercurrent pneumonia. At the autopsy the encephalon and membranes were found intact. In the right half of the spinal cord, from the level of the second pair of cervical nerves to the upper portion of the lumbar region, at the junction of the anterior and posterior cornua, there existed a cavity lined by thickened membrane. The cavity was largest at the level of the cervical enlargement, and grew smaller thence upward. In the cervical region the posterior cornua, the posterior two-thirds of the anterior cornua, and the anterior two-thirds of the columns of Goll and Burdach, were destroyed. At the level of the fifth pair of cervical nerves the left anterior cornua was compressed at its base by the growth. At the level of the seventh pair, the glioma, at the expense of

which the cavity had been formed, was but little excavated. In the upper part of the dorsal region the growth occupied the base of the posterior cornua, extending to the periphery of the cord between the columns of Goll and Burdach. Here it had begun to invade the gelatinous substance of Rolando upon the left. Lower down the excavation again became more pronounced. In the lumbar region, the base of the posterior cornua had been destroyed. The cord was normal at the lumbar enlargement. The right anterior nerve-roots in the cervical region had undergone slight atrophy. The other nerve-roots were normal. The wasted muscles presented a condition of simple atrophy.

Primary Splenomegalia.

At a meeting of the Société Médicale des Hôpitaux, Debove (*L'Union Médicale*, 1892, No. 90, p. 177) announced that, in addition to the enlargement of the spleen found in connection with various acute and chronic diseases, with leukæmia and pseudo-leukæmia, the spleen sometimes undergoes primary enlargement. The affection is of insidious invasion. Sometimes the first symptoms are local—a sense of heaviness, discomfort, or pain in the left hypochondrium; there may be attacks of severe pain, due to circumscribed peritonitis. At other times general symptoms first appear—loss of strength, pallor, apathy, and emaciation. The spleen will be found to be voluminous, irregular, bosselated, and indurated. The number of red blood-corpuscles and the quantity of hæmoglobin are diminished, but there is no excess of colorless corpuscles. Digestion is deranged. Hæmatemesis is frequent, and in some instances so profuse as to threaten life. Epistaxis and intestinal hemorrhage are also common. The course of the affection is slow; it may last for ten or twelve years; it usually terminates fatally after the development of a cachexia. Fever is absent, save during attacks of peritonitis. The lymphatic glands are not involved. The liver is usually more or less enlarged and cirrhotic. The condition is thought to depend upon a fibrous hyperplasia. Nothing is known in an etiologic connection. In treatment, a milk diet and the administration of large doses of arsenic are advised.

A Case of Leukæmia and Diabetes.

Rebitzer (*Prager medicin. Wochenschr.*, 1892, No. 31, p. 356) has reported the case of a man, fifty-six years old, who, in his twenty-sixth year, had an attack of malarial fever, from which he thoroughly recovered. In his fiftieth year debility and sharp pains in the legs appeared. At the same time several small abscesses formed on the chest and on the right upper eyelid. Diabetes was diagnosticated. Following an attack of left-sided pleurisy, four months before the patient came under observation, it was noticed that the abdomen was enlarged and that a hard body could be felt below the left costal arch. There was no history of alcoholism, and venereal infection was denied. The patient had lost flesh and was pallid. The lower extremities were œdematous, as were the penis, scrotum, and abdominal walls. There were evidences of ascites. The spleen was palpably enlarged. The post-cervical, epi-trochlear, and axillary glands were also enlarged. Both retinæ presented punctate and

linear hemorrhages. The urine contained both albumin and sugar, as well as granular casts. The number of red corpuscles in the blood and the quantity of hæmoglobin were diminished, while the number of colorless corpuscles was increased. A diagnosis of diabetes, leukæmia, and chronic nephritis was made. Dyspnœa became marked; sleep disturbed; cyanosis decided; the pulse rapid; strength failed, and death took place. At the autopsy, liver, spleen, kidneys, and axillary, inguinal, mediastinal, and retro-peritoneal lymph-glands were found enlarged. There were effusions in both pleuræ and in the peritoneum. Microscopically, the blood was found to contain many mononuclear leukocytes and a small number of polynuclear leukocytes; in the marrow of the sternum mononuclear and polynuclear leukocytes were likewise found. In the kidney the uriniferous tubules contained hyaline casts; some glomeruli were degenerated; the interstitial connective tissue was slightly increased; leukocytes were present in abundance; the epithelium of the uriniferous tubules responded to the iodine test for glycogen. The lymphoid structure of the spleen was increased. The liver contained large numbers of leukocytes. The pancreas presented no alteration. The enlarged lymphatic glands had undergone hyperplasia.

The Etiology of Leukæmia.

Pawsowsky (*Deutsche medicin. Wochenschr.*, 1892, No. 28, p. 641) in four cases of leukæmia found short, spore-containing bacilli, with rounded extremities, staining best by treatment for from twenty-four to forty-eight hours with a watery solution of methylene-blue. The organisms were principally outside of the leukocytes. They varied in length from 0.002 to 0.003. Culture experiments were successful, but inoculation failed. Corresponding organisms were found in the liver, spleen, lymphatic glands, intestinal canal, lungs, kidneys, brain, and spinal cord from three fatal cases of leukæmia. The organisms were especially numerous in the liver. It is concluded that leukæmia is a disease of the blood, the bacilli present, by a chemotactic influence upon the blood-making organs, inducing a hyperplasia of the leukocytes.

The Pathogenesis of Arthritic Muscular Atrophy.

In support of the view that the muscular atrophy observed in association with affections of the joints is reflex, Hoffa (*Beiläge zum Centralbl. f. Chir.*, 1892, No. 32, p. 51) has demonstrated that the atrophy does not occur when the integrity of the reflex arc is destroyed. Thus after cutting the posterior roots of the third, fourth, and fifth lumbar and the first sacral nerves in dogs in which subsequently purulent inflammation of both knee-joints was set up by injection of silver nitrate, muscular atrophy took place upon the left but not upon the right side. The process is conceived to depend upon an irritation transmitted from the articular nerve-endings to the centres in the spinal cord governing the nutrition of the muscles affected. The extensors of the joints are predominantly affected, partly on account of the anatomic relations between the nerves that supply the joint and those that supply the extensor muscles, and partly because the atrophied muscles are the tensors of the capsule of the diseased joint. The atrophy is simple in character, so that the muscles do not present reactions of degeneration.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE UNIVERSITY AND GERMAN HOSPITALS;

ASSISTED BY

ALFRED C. WOOD, M.D., INSTRUCTOR IN CLINICAL SURGERY, UNIVERSITY OF PENNSYLVANIA; ASSISTANT SURGEON, UNIVERSITY HOSPITAL.

AND

C. L. LEONARD, M.D., ASSISTANT INSTRUCTOR IN CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA.

EPISPADIAS IN THE FEMALE.

AUFFRET (*La Sem. Méd.*, 1892, No. 19) reports a case of malformation of the urethra in a woman, nineteen years of age, which resembled the condition of epispadias in the male. The meatus was represented by a simple linear fissure, the inferior lip alone being clearly marked. The urethral canal, clitoris, and nymphæ were absent above, and the middle portion of the labia majora also was poorly developed. The hymen was intact, but dilated to permit the passage of the completely prolapsed uterus. There had been incontinence of urine from infancy.

HÆMATOMA OF THE FOLD OF THE ELBOW.

CHARVOT (*La Sem. Méd.*, 1892, No. 19) claims that hæmatoma here is nearly always the result of rupture of the brachialis anticus, due most frequently to complete posterior luxation of the elbow. The clot organizes and presents the appearance of a tumor the size of an egg, rounded, with a mammillated surface, and of the consistence of cartilage, or even of bone. It is deeply situated at the base of the internal bicipital groove in the coronoid fossa, and gives rise to a partial ankylosis of the elbow. Operation is indicated when it does not tend to disappear.

CASES OF GALL-BLADDER SURGERY.

ABBE details (*N. Y. Med. Journ.*, vol. lv., No. 5) four cases of biliary obstruction which were subjected to operation. The patients all recovered.

The first case was one of recurring attacks of biliary colic lasting over a period of four months, with a history of a single attack five or six years before. The patient was a woman sixty-four years of age. On account of the pain and biliary obstruction she was becoming exhausted. A tumor the size of an egg was found in the region of the gall-bladder. A vertical incision was made over the tumor, and the enlarged gall-bladder popped out of the wound as soon as the peritoneum was opened. Three good-sized stones were found, the two smaller of which were wedged tightly in the cystic duct. The stones were with difficulty worked back into the gall-bladder and removed. A small gum-elastic bougie then passed into the common duct and onward with ease. The wound in the gall-bladder was closed, fine cat-

gut being employed to unite the muscular layer and the finest black silk to unite the peritoneal edges. The abdominal wound was closed in separate layers by buried sutures. Convalescence was uninterrupted and complete. At this time, six months after the operation, the patient remains in perfect health.

The second case is that of a young woman with gall-stone and suppurating gall-bladder. The patient had a tumor on the right side below the ribs, with progressing debility and hectic. The tumor was as large as the fist and tender. It had been diagnosticated as cancer. The same incision was used as before. The gall-bladder presented a malignant appearance. It was incised, when the walls were found to be from an inch to an inch and a half in thickness, and resembled and cut like carcinomatous tissue. The cavity of the gall-bladder held but two drachms of muco-purulent fluid. No foreign body could be felt. Convalescence was uneventful, but the sinus did not close, and the mass remained. Six months afterward the patient returned to have the sinus closed, when a gall-stone as large as a pecan-nut was found in the sinus; the tumor had disappeared. After removal of the stone the sinus healed promptly; the patient was in robust health.

The third case was a female twenty-nine years of age, with a history of biliary colic, lasting over a period of ten years. Operation was performed by vertical incision, and fifty-three small and large stones were evacuated. It was impossible to pass a probe into the common duct, but no stone could be felt. The gall-bladder was stitched to the abdominal wound, and a sinus persisted. Six months later the patient returned, when the gall-bladder was removed after ligature close to its junction with the hepatic duct. After removal it was found that a calculus the size of a pea was lodged in the duct. Very careful examination before removal failed to give any evidence of the presence of this stone. The abdominal wound was sutured. Rapid recovery followed, and three years later the patient remained in perfect health.

The last case was also that of a female, aged thirty-six years. The history was that of biliary colic, jaundice, loss of flesh, vomiting, enlarged liver, clay-colored stools, and urine the color of porter. The patient was in very poor condition, and her urine contained albumin and hyaline casts. The same incision as in the previous cases was made. Several moderate-sized calculi could be felt in the gall-bladder and cystic duct, and one as large as a walnut in the common duct. The gall-bladder was incised and the stones removed. It was necessary also to incise the cystic duct to release others, the incision being carried on to the common duct to free the stone lodged there. The common duct was sewn with the finest black silk, and the gall-bladder and its duct removed. The hepatic duct would admit the finger readily. A rubber drainage-tube was passed for a short distance into the hepatic duct. Over this was placed a larger tube, terminating at the site of the junction of the ducts, and around this iodoform gauze was packed, with the idea of draining all the bile out of the abdominal wound, and after a few days removing the inner tube, letting the larger one remain to drain the sinus. On the ninth day bile was apparent in the stools, and the jaundice progressively faded. At the end of four weeks the fistula, which had remained open, was strapped, and closure followed at once. This case illustrates that intense cholæmia is not necessarily a contra-indication to operation.

A case is also reported in which operation was done for supposed empyema of the gall-bladder. The search was unsuccessful in locating the cause, and drainage was all that could be done. The man died a week later, when the autopsy showed a small, soft, malignant growth attached to the wall of the duct, just within its lower end.

It is emphasized that the four cases of obstructive disease reported were all progressing to a fatal end, and by operation perfect health was restored.

[As an interested observer of the operation in Case IV., it seems to me worth while to call attention to the ingenious arrangement of the drainage-tubes. This seemed to me at the time admirably adapted to meet the requirements of the conditions present, and the result shows that this was the case. —J. W. W.]

Amputation at the Hip-joint.

McCurdy (*N. Y. Med. Journ.*, vol. lv., No. 18) suggests the following modification of Wyeth's method of bloodless amputation at the hip-joint: A line is drawn from the most prominent point of the great trochanter to the perineum, a steel mattress-needle, three-sixteenths of an inch in diameter and a foot long, is entered on this line just internal to the femur, its point emerging just below the *tuber ischii*; this avoids all vessels, and a figure-of-8, made by throwing a round rubber tourniquet around the projecting needle ends, over the internal aspect of the thigh, prevents all possibility of hemorrhage. The cutting of the flaps, disarticulation, ligation of vessels, and dressing of the stump then follow.

Results in Cases of Hip-joint Disease Treated by the Portable Traction Splint.

In the *New York Medical Journal*, vol. lv., No. 18, Sayre reports seven cases of hip-joint disease treated by the portable traction splint, without immobilization, except during the inflammatory stage of the disease. The cases are reported in detail, and are worthy of careful study. In spite of the fact that several of the patients belong to tubercular families, and all were pronounced cases of morbus coxarius, the result in one instance was a functionally good joint, in the other six cases, physiologically perfect joints followed the treatment.

The statistics of 407 cases of morbus coxarius treated between 1859 and 1889 are given. Of these, 118 were in the first stage, 119 in the second stage, 82 in the third, 88 not stated. The results of treatment in the 407 cases were as follows:

Cured, motion perfect	71
" " good	142
" " limited	83
" " ankylosed	5
Unknown	78
Under treatment	14
Abandoned treatment	3
Discharged	2
	398

Died of exhaustion	2
" of phthisis	1
" of pneumonia	1
" of tubercular meningitis	5
Total number of deaths	9

Cuts from photographs showing the amount of motion in some of these cases are very convincing, and argue well for this method of conservative treatment.

A New Method of Treating Acute Urethritis.

Vaughan (*New York Medical Journal*, vol. lv., No. 18) details the plan which he has recently developed for treating acute urethritis. He includes all forms of acute inflammations of the anterior urethra, whether specific or non-specific, as the same rule of treatment applies to all.

At the suggestion of Dr. Powers, the author began the use of dermatol in these cases. Preparations holding this substance in suspension were used with negative results. The mucilaginous principle extracted from Irish moss and from Iceland moss, combined with benzoin and glycerin (known as plasment) was found to be a very satisfactory basis for the application of dermatol to the urethra. The strength advised is from three to five per cent.

The method of applying this is as follows: The patient is requested to urinate, after which a soft rubber catheter about five inches long, and with numerous openings near the end on all sides, is passed and the urethra irrigated with warm water, or with warm chloride of sodium solution, one drachm to the pint of water. Without removing the catheter about half a drachm of the dermatol plasment is injected, either from a hard rubber syringe or a compressible tube fitted with a hard rubber tip, the catheter being gradually withdrawn during this injection. Absorbent cotton is applied over the meatus, and changed as often as necessary. Thorough antisepsis of instruments and hands is urged.

A long list of cases is tabulated, showing the results of this treatment. The author concludes from his studies: 1. That in the treatment of acute urethritis, soothing applications rather than irritants should be used. 2. That the passage of the soft rubber catheter recommended does not, as a rule, irritate the urethra; that if it does it should not be used. 3. That plasment is an excellent vehicle for urethral medicaments. 4. That dermatol in plasment is the most efficacious drug he has used in urethritis, although he has used no other drug in plasment. 5. That treatment by the above-described method has produced a milder course and fewer complications than that with other remedies that he had used.

Powers says that dermatol in uniform admixture with gelatin stopped the growth of the anthrax bacillus, staphylococcus pyogenes aureus, bacillus prodigiosus, bacillus of typhoid fever, and that of pneumonia.

[My own experience has led me to believe that methods of treatment which involve the passage of any instrument, even a soft rubber catheter, into the urethra during the acute stage of inflammation, are useless or worse than useless. Dr. Vaughan's results would seem, however, to show that, what-

ever pain or annoyance it may have caused the patient, it did not interfere with the process of cure.—J. W. W.]

Cases of Cholecystotomy.

Two cases of cholecystotomy for gall-stones are reported by Gay, in the *Boston Medical and Surgical Journal*, 1892, No. 17. The first was in a woman, aged thirty years, with pain, jaundice, vomiting, emaciation, debility, tenderness over gall-bladder but no tumor, clay-colored feces, and bile-stained urine. At the operation a calculus the size of a large pea was removed. Recovery was without event. Some months later the patient suffered from an attack of biliary colic.

The other patient was a woman, aged fifty-nine years. She presented the usual symptoms: jaundice, vomiting, pain, exhaustion, loss of appetite, high-colored urine, pale feces, and emaciation. After incision through the abdominal wall, firm adhesions existed everywhere. In separating these a profuse hemorrhage took place, which threatened the life of the patient. The gall-bladder could not be located on account of the adhesions, and as the patient was failing, further interference was abandoned, and the wound was packed with gauze. The patient died at the end of ten days. The autopsy revealed a calculus the size of a hazel-nut in the common duct.

The Removal of Necrotic and Carious Bone with Hydrochloric Acid and Pepsin.

Morris (*New York Medical Journal*, 1892, vol. lv. No. 12) briefly considers this subject. The early attempts at decalcification of dead bone were unsuccessful for two reasons: First, although the superficial layers of necrotic bone were easily decalcified, the deeper portions remained unaffected by the acids; especially was this the case if there was caseous infiltration or fatty *débris*. Second, cellulitis was apt to develop during the treatment.

After much experimentation, the author has adopted the following method of treatment: An incision is made through the soft parts in the most direct route to the seat of dead bone, and, if sinuses are present they are all opened into the one large sinus, if possible. The latter is packed with antiseptic gauze and allowed to remain quiet until granulations have formed. This is not an absorbing surface, and the danger of cellulitis is practically *nil*. The next step consists in injecting into the sinus a 2 to 3 per cent. solution of hydrochloric acid in distilled water. If the patient is in bed, the injections may be made every two hours during the day; but if the patient is up and about, the acid solution is used at bed-time only. The patient should always take that position which favors the retention of the fluid. At intervals of two days an acidulated pepsin solution (pepsin, pure, ʒss, hydrochloric acid ♏xvj, distilled water fʒiv) is thrown into the sinus. This will digest decalcified bone and caseous or fatty *débris* in about two hours. This treatment is to be continued until the sinus heals from the bottom, showing that the dead bone has all been removed. Even in tuberculous cases this treatment proves successful when combined with immobilization of the part and tonic constitutional treatment. If there is free suppuration, the cavity should be treated with a solution of peroxide of hydrogen before each injection.

Experiments made on the live turtle prove that exposed living bone is also susceptible to the decalcifying action of acids. In a 5 per cent. hydrochloric acid solution a piece of dried humerus of a man was decalcified in six hours. In the same solution the exposed part of the shell of a turtle was decalcified in thirty hours. Microscopic examination showed that the blood-vessels were destroyed where the shell had been decalcified. In practice, a wall of lymph and granulation tissue usually protects the healthy bone.

[Clinical experiments which I am now trying would seem to show a definite value in this procedure, especially in otherwise inaccessible foci of carious bone; but neither the number of cases, nor the time which has elapsed since the treatment was begun, justify a more positive statement.—J. W. W.]

Gall-bladder Surgery.

Richardson (*Boston Medical and Surgical Journal*, 1892, No. 17) reports the following cases:

A woman, aged thirty, had attacks of colic for seven years. When examined there was seen a considerable degree of jaundice, and the liver was somewhat enlarged. There was some tenderness over the gall-bladder, but no distention could be made out. Although the diagnosis of obstruction of the common duct, due to gall-stone, was made, the symptoms did not seem severe enough to demand operation. Suddenly, five months later, the patient developed symptoms of a violent peritonitis, and died. At the autopsy a large stone was found in the common duct, which had become perforated, causing peritonitis. The lesson taught by this unfortunate case, added to a considerable experience in gall-bladder surgery since, has led Dr. Richardson to strongly urge exploration in similar cases.

A man, thirty-nine years of age, had a tumor of the gall-bladder, with loss of flesh and persistent jaundice. There was a history of having passed a gall-stone. At the margin of the ribs on the right side there was felt a round, fluctuating tumor, with two or three hard nodules at the upper part. In spite of the probability that this case was of a malignant nature, exploration was advised. The gall-bladder was emptied by an aspirating needle of a quart of fluid as clear as water. Further examination revealed malignant disease in the neighborhood of the common duct, and nothing more was done. Death occurred ten days later. Post-mortem showed cancer of the liver, with primary disease of the head of the pancreas.

Another case was that of a male, aged fifty-eight years, with symptoms much like those of the last patient. The gall-bladder was stitched to the abdominal wall and opened. A pint and a half of pure bile escaped. The cause of the obstruction could not be ascertained. The patient died nine days after the operation. Autopsy revealed cancer of the head of the pancreas. In neither of these cases was the operation the cause of the fatal termination.

A woman, aged forty-one years, complaining of pain in the region of the stomach, loss of flesh, clay-colored stools, and vomiting, with evidences of malignant disease of the liver, was explored by abdominal section. The liver was found to contain numerous cancerous nodules. The wound was

closed. Recovery from the operation was rapid, but death occurred some months later.

Six cholecystotomies for gall-stone are detailed, five of which made good recoveries; the sixth died from sepsis.

Dr. Richardson places most weight on the history in making a diagnosis of gall-stone, while but little is attached to physical examination. A history of recurrent attacks of pain, with transitory jaundice, persistent discomfort for a long period of time, with a general cachexia, would point to cancer. The best incision, in the opinion of the author, starts a little to the left of the linea semilunaris, an inch from and parallel to the margin of the ribs, and carried across the fibres of the external oblique. If the gall-bladder is loose and presenting, it should be stitched to the abdominal wall before being opened; but if it is contracted and adherent, a glass drainage-tube is to be introduced and packed around with gauze. Siphonage may be made use of.

[The vertical incision is preferred by many operators. Tait, whose experience has been exceptionally large, always uses it. I have found that it gave an almost equally good exposure of the operative area, and could be much more quietly and easily closed than the oblique incision.—J. W. W.]

A Contribution to the Study of the Restoration of the Inferior Maxilla.

Martin (*Lyon Médical*, tome lxix., No. 13) describes the case of a man aged between forty and forty-five years, who on account of an inflammatory trouble of the lower jaw, suffered from necrosis of the two lateral aspects of the bone. The anterior portion, with the incisor teeth and those adjacent, was no longer in continuity with the remainder of the bone. Sequestra had been removed, after which cicatrization began. On account of the loss of bone healing was taking place in bad position; some intervention seemed, therefore, imperative. An apparatus was accordingly made, the anterior part of which served to fix the teeth of the fragment, while the posterior part took the place of the bone on either side which had been destroyed. Springs were interposed to keep up a continuous tension. The action of the apparatus was to carry the fragment forward to its normal position and at the same time to overcome the action of the depressor muscles. A slight modification of the appliance later became necessary. The author did not see the patient for three months, when the position of the lower front teeth was found to be almost if not quite normal. The final result was not what the author desired, owing to the lack of interest and perseverance of the patient; nevertheless, the deformity did not recur. The description of the apparatus is supplemented by a number of cuts, and the position of the jaw is also shown before and after treatment.

Large Echinococcus Cyst of the Liver Successfully Obliterated by Laparotomy and Drainage.

Richardson reports (*Boston Medical and Surgical Journal*, 1892, No. 17) the following instructive case: A man, aged thirty-two, who had always had good health, was taken about a month previously with what his physician called inflammation of the bowels. Although there was extreme nausea, he

could not vomit. Some days later the patient noticed a "knob" on the right side of the abdomen close to the ribs; this rapidly increased in size, and fever and chills developed, when he was brought to the hospital. At this time the patient had a large tumor in the right side of the abdomen, continuous with the liver dulness, and extending down to the crest of the ilium. There was dulness and distinct fluctuation over this area. Temperature 102° F., pulse 120. Although a positive diagnosis could not be made, the condition eminently warranted immediate exploration. An incision parallel with the fibres of the external oblique was made in the right flank, which exposed a tumor similar in color and appearance to the liver. This was sutured to the parietal incision with interrupted silk sutures. An aspirating needle withdrew pus. A free incision was then made which evacuated large quantities of pus. The opening became clogged with a jelly-like substance, which on being removed was evidently the daughter-cyst of an enormous echinococcus. At least five hundred cysts were removed by irrigation, varying in size from an English walnut to a pin's head. A large glass drainage-tube was introduced and packed around with gauze. The patient made a perfect recovery, and remains well up to this time.

Note on Two Cases of Club-hand of Congenital Origin.

Kirmisson and Sainton (*Revue d'Orthopédie*, 1892, No. 2) describe two cases of congenital club-hand. This deformity is of rare occurrence. It has not yet a defined pathological anatomy. In most of these cases one of the bones of the forearm is either wanting or is more or less atrophied. In one of the cases reported the deformity was double.

In the work of Hoffa, which gives the most recent and interesting details on this subject, the absence of or lack of development of one bone of the forearm, is classified into the radial and ulnar varieties. Of these the former is much more common. The two cases reported in this paper were both of the radial variety. The numerous observations of Hoffa go to show that when the radius is absent the hand is supported by the ulna. In such cases this bone is very often curved like the letter S. In most cases the scaphoid and trapezius are absent from the carpus. The thumb and its metacarpus are also usually absent.

The first case detailed by Kirmisson and Sainton is that of a male child born in February and dying in November. Both hands were similarly deformed. At the autopsy the cause of death could not be ascertained. The dura mater was very adherent to the skull. The brain was much congested, but there was no liquid on the surface or in the ventricles. The viscera did not present any abnormality. The two arms were removed and preserved in chloral solution. Careful dissection of both arms and forearms showed the numerous muscular anomalies to be the same on the two sides. The humerus measured 10.5 cm., ulna 7 cm., radius 4.5 cm., each side being the same. The articulation at the wrist was very loose. The scaphoid and semilunar articulated with the inferior extremity of the radius. The cuneiform articulated with the ulna as usual. The disposition of bones of the carpus and its connections with the metacarpus was difficult to establish. On the internal border were seen the pisiform and cuneiform. The unciform articulated with

the last two metacarpal bones, the os magnum with the third metacarpal, and externally a little bone articulated with the second metacarpal. The carpal bones were not only deficient in number, but were also very small. The last four fingers had the usual three segments regularly formed. A finger occupied the position of the thumb, the first phalanx of which was 15 mm. in length, the second 7 mm., and a third of the same length.

The second case presents a club-hand on the right side. Child, eight months old, very large and asymmetrical head. The left hand is normal. The right arm is much shorter than the left. The arrest of development has taken place on the antebrachial segment. Left humerus measures 12 cm., ulna 8.5 cm., right humerus 11.5 cm., ulna 6 cm. The right forearm when at rest is flexed on the arm, and it cannot be extended beyond an angle of ninety degrees. The hand is at a right angle to the forearm and inclined toward the radial side. The lower end of the ulna projects prominently beneath the skin. The hand has three fingers, each appears to have a metacarpus. On the external border there is a finger much smaller than the others. It is inserted obliquely upon the first of the three fingers, but seems to have a rudimentary metacarpal bone. The radius is not apparent, at least the body and inferior extremity. The condition of the carpus is difficult to determine.

The first case belongs to the third class of Bouvier's classification. The second case being alive, it was impossible to determine the exact disposition of the bones and soft parts. It is to be remarked that a scar was seen at the position of the styloid apophysis of the ulna in all of these three cases—the first case being double.

Pleurisy and Thoracentesis.

Lereboullet (*Gaz. hebd. de Méd. et de Chir.*, 1892, No. 20) urgently recommends the proper selection of cases for thoracentesis. He always begins the treatment of pleurisy by combating the pain, dyspnœa, and cough by applications of dry or wet cups, and the use of purgatives, diuretics, and milk diet. He does not apply blisters, but waits for defervescence, which should appear in from six to ten days. If the effusion is not excessive, and at the expiration of this time commences to disappear with a certain rapidity, thoracentesis is not indicated, and blisters, which now are of service, will suffice to cure the patient. Should the effusion remain stationary thoracentesis will be indicated. Puncture, however, is positively indicated in the acute sero-fibrinous pleurisy (pleuritic fever of M. Lancereaux) where the effusion steadily increases, with marked displacement of the viscera and pronounced dyspnœa. Even here medical treatment should be instituted in the beginning, and continued during the febrile period if the effusion remains moderate, but thoracentesis should be performed, not only should any accident supervene, but even if the diminution of the effusion does not commence simultaneously with the defervescence. Alongside of this form of pleurisy is found the so-called latent or rheumatoid form associated with a sero-plastic effusion. This is regarded to-day as tuberculous in nature, and only the puncture will result in a cure. The sooner it is performed the greater will be the chances of recovery.

OTOLOGY.

UNDER THE CHARGE OF
CHARLES H. BURNETT, M.D.,
CLINICAL PROFESSOR OF OTOLOGY IN THE WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, PHILADELPHIA.

Otitic Abscesses of the Brain.

Jansen, of Berlin, reported cases of otitic brain abscesses at the same time that Baginsky and Gluck reported their successful operation for the relief of a cerebral abscess from acute otitis. (See this Journal, July, 1892.) In Jansen's first case, the aural disease productive of the cerebral abscess was acute. (*Berliner klin. Wochenschrift*, 1891, No. 49.) The patient was a locomotive engineer, forty-six years old. In April, 1891, he was attacked with hardness of hearing and roaring in the ears. In a month later pain set in in the right ear and mastoid. The latter became swollen, but this condition subsided. By the end of June the aural pain became greater in the right ear, and spread throughout the entire right side of the head, especially in the brow and temple. These pains were unendurable. By the middle of June a swelling occurred again in the mastoid process, accompanied with vertigo, nausea, and vomiting, and the patient's memory failed. There was *at no time discharge* from the ear.

When the patient was received into the hospital, on August 3d, the pulse was frequent, no vertigo, no paresis, strength fair; the membrana tympani was swollen, dull red, no perforation; malleus invisible, mastoid swollen at the lower process, hearing very much impaired, intense pain in the right half of the head, but the latter part not sensitive on percussion. The mastoid was chiselled open the same day, and quite a large purulent collection found in it. This cavity was laid freely open without entrance into the middle cranial fossa. The pains in the right side of the head continued after the operation; they were, perhaps, a little less severe. On the fifth day after the operation vertigo occurred. On the 9th of August slight muscular weakness of the left arm was observed, and on the next day a similar condition was observed in the face and lower extremities of the same side. From the 10th to 17th great changes occurred in the paretic symptoms, with a general and gradual increase in the same. Somnolence, increased hardness of hearing, were superadded with vertigo and vomiting, while the headache remained undiminished. There was no choked disc, no fever, no slowness of pulse.

On the 17th the patient was examined by Dr. Oppenheim, who found the following condition: "Conjugate deviation of the eyes and head toward the right, left hemiparesis, with hyperæsthesia of the same side and left hemianopsia; slight exaggeration in the reflexes on the left." Diagnosis: "Abscess of the brain, located so as to involve the posterior part of the inner capsule and posterior part of thalamus."

On August 18th the squama was trephined above the auditory canal. A trocar was passed inward and upward, giving vent to a tablespoonful of fetid

pus. Then a crucial incision in the dura mater and an incision into the substance of the brain were made. The wound was tamponed with iodoform gauze. In the course of seven days nearly all the morbid phenomena had disappeared, after having presented an aggravation on the evening after the operation. By the 12th of October cicatrization was complete, and the patient left the hospital cured. On the 17th of October the patient returned to his home at a distance, and on the next day was seized with loss of appetite and vomiting. On the 21st facial paralysis and hemiplegia appeared on the left side, accompanied by loss of consciousness and convulsions. The wound became bulging and pulsatile. Death occurred on October 23d.

This case is especially interesting as cerebral abscess resulting from acute otitis media is very rare. Dr. Jansen, in the same communication with the above, gives the notes of two other cases of otitic cerebral abscess—one in a man thirty-four years old, the other in a boy eight years old, both subjects of chronic aural disease.

Cerebral Complications of Otitis Media.

Albert Robin (*La Médecine Moderne*, 1891, No. 48), in the course of a clinical lecture on the above subject at the Hôpital de la Pitié, Paris, presented a case with the following symptoms and drew conclusions as here presented:

A woman, forty-six years old, was brought into the hospital delirious, with injected face and partial hemiplegia of the left side. There was, however, no facial paralysis; only a little stiffness of the nucha. Sensibility was intact; the pupils were normal; the axillary temperature 39.5° C.; pulse 110 to a minute, but regular. The heart was enlarged; there was Cheyne-Stokes respiration; the tongue was dry, grayish, and furrowed; there were incontinence of urine and slight albuminuria. The liver and spleen were apparently normal. In a few days the delirium diminished, and there was a tendency to coma. The face was less red and the tongue less dry, but the same stiffness of the neck continued with incontinence of urine and feces, and the hemiplegia was now complete. Diagnosis was not yet made. Four days later the temperature declined to 37.5° C., the delirium became much less, and the tongue normal. There was some diarrhœa, and the Cheyne-Stokes respiration continued. On the next day the coma returned, and the next day a *purulent discharge from the right ear* set in, which rendered the diagnosis clear. Endopericarditis infectiosa had been considered possible, but otitis had not been suspected. Two days later the patient was much calmer, with lucid intervals, and the paralysis diminished. In four days more the patient could move her arms and legs, but the stiffness of the neck, Cheyne-Stokes respiration, and paralysis of the sphincters continued. Four days later, *i. e.*, on the eighteenth day of the malady, all paralysis had disappeared, the intellect was entirely clear, and the patient could give her antecedent history, as follows: Typhoid fever at ten years of age; at twelve years St. Vitus's dance; ten years before the present illness puerperal fever. But the right ear had never been affected. Six months previous, however, the hearing had grown slightly dull in the right ear. Finally, a week before entering the hospital, she suddenly lost consciousness and fell when getting

into a carriage, that being the beginning of the illness for which she was brought to the hospital.

By the twenty-eighth day the discharge from the ear had entirely ceased, and in the course of four weeks more the patient had ceased to present any nervous phenomena. The case had presented, according to Robin, an instance of reflex nervous phenomena from an otitis media. These manifestations are brought about by contiguity existing between the petrous bone and the dura mater, by vascular or by nervous transmission. Had the ears been examined in this case when the patient was brought to the hospital, or even before that time, and the otitis media discovered, paracentesis of the membrana tympani would have in all probability been followed by prompt and entire relief from all the cerebral symptoms.

Operative Treatment for Relief of Chronic Suppurative Affections of the Middle Ear.

Dr. Frederick L. Jack, of Boston, reports three cases of chronic purulent otitis media relieved by operative removal of the necrotic membrana and malleus after other rational means had failed to give relief. Incidentally, he gives the ratio of perforation of the flaccid membrane in purulent otitis media as ten per cent. He does not state, however, whether this was the sole perforation in the membrana in these cases. The operations were performed upon the patients when anæsthetized. His conclusions agree with those of Sexton and C. H. Burnett, viz.:

1. The removal of the drum membrane and ossicles is attended with little annoyance to the patient, proof of which is sufficient to warrant the performance of the operation as the only means of cure in many cases.
2. The operation often produces marked improvement of the hearing.
3. Satisfactory results may be expected toward the relief of tinnitus and vertigo.
4. The results of the operation seem to be permanent.

Dr. Jack also says: "The possibility of hearing well without the membrana tympani, malleus, and incus has been successfully demonstrated in a number of cases; and this suggests what operative procedure may be expected to do in some cases of deafness due to hypertrophic catarrh of the middle ear, without fixation of the stapes. The distressing symptom of tinnitus has been relieved by the same operation. It has also been done with success in certain cases of disturbance of equilibrium, from pressure transmitted through the middle ear."—*Boston Medical and Surgical Journal*, vol. cxxvi., No. 22.

Camphorated Salol in Chronic Suppuration of the Middle Ear.

Dr. Pégou has recently reported in the *Revue de Thérapeutique* very favorable experiences with camphorated salol in chronic suppuration of the middle ear. The formula for its preparation is as follows: "Equal parts of salol and camphor, mixed and heated until fusion is complete, without water, alcohol, or any other solvent. The mixture is then filtered and preserved in a yellow glass bottle, hermetically sealed. Thus prepared, camphorated salol is a thick, colorless, unctuous liquid, soluble in ether, chloroform, or oil, but insoluble

in water. Light and air decompose it rapidly." Its application is neither painful nor irritating, and it seems to possess the property of rapidly curing a distressing and very intractable disease. It is applied upon a small pledget or tampon of cotton-wool; to this may be attached a fine thread by which the patient can remove it after twenty-four hours. The ear should be previously washed out with a weak solution of boric acid, to be repeated once or twice daily when the tampon is not in position. The applications are to be made once in two or three days, and, if the suppuration is not profuse, the tampons may be left *in situ* from one application to another. The time required for a cure varies from four to twenty days. When it has not entirely cured it has always diminished the fetor and quantity of the purulent discharge.

Otological Section, American Medical Association.

At the meeting of the American Medical Association, Detroit, June 7–10, 1892, the following aural papers were read and discussed in the Section of Laryngology and Otology: "Mastoiditis — Opening; Temporary Relief; Craniotomy; Death from Cerebral Abscess; Autopsy Demonstration," Dr. H. Knapp, of New York. "Mastoid Cases," Dr. B. Alexander Randall, of Philadelphia. "Report of Five Cases of Mastoid Disease and Operation Therein," Dr. Milton Greene, of Grand Rapids, Mich. "Observation of a Case of Acute Otitis Media; Cerebral Abscess; Trepanation and Death," Dr. Charles H. Burnett, of Philadelphia. "Compressed Air and Sprays in Diseases of the Throat, Nose, and Ear," Dr. S. S. Bishop, of Chicago, Ill. "Observations upon Excision of the Drum-head and the Two Largest Ossicula," Dr. Charles H. Burnett, of Philadelphia. "Spasmodic Contraction of the Tensor Tympani Muscles," Dr. C. W. Richardson, of Washington, D. C. "Peroxide of Hydrogen and its Use in Ear Disease," Dr. W. B. Johnson, of Paterson, New Jersey. "Excision of Auditory Ossicles in Chronic Aural Catarrh, with Report of Failure," Dr. H. V. Würdemann, of Milwaukee, Wis., and "Treatment of Opacities of the Membrana Tympani," Dr. Francis Dowling, Cincinnati, Ohio.

There were in all sixteen papers upon aural subjects on the programme, but the above were the only ones presented at the meeting.

American Otological Society.

There were eighteen papers presented at the recent meeting of the above-named society, July 19th of this year. Of these, nine, or one-half, were upon the subject of mastoid disease, presented respectively by Drs. O. D. Pomeroy, B. Alexander Randall, Charles J. Kipp, Clarence J. Blake, H. Knapp, J. B. Emerson, T. Y. Sutphen, Gorham Bacon, and D. B. St. John Roosa. Other subjects were treated of as follows: Dr. B. Alexander Randall, of Philadelphia: "Preliminary Notes on Craniometric Studies in Relation to Aural Anatomy." Dr. J. B. Emerson, of New York: "A Case of Pyæmia following Acute Suppurative Otitis; Recovery." Dr. Samuel Theobald, of Baltimore, Md.: "On the Value of Weak Solutions of Bichloride of Mercury in the Treatment of Otitis Media Suppurativa (1 to 8000 was the usual strength)." Dr. F. L. Jack, of Boston: "Remarkable Improvement in Hearing by Re-

moval of the Stapes." Dr. C. J. Blake, of Boston: "Middle-ear Operations (a Plea for the Removal of the Stapes in Cases of Immobilization of this Bonelet)." Dr. D. B. St. John Roosa, of New York: "A Case of Exostosis of the External Auditory Meatus." Dr. R. A. Reeve, of Toronto: "A Case of Exostosis of the Meatus, which Caused so much Pain by Pressure on the Opposite Wall as to Demand Operation." Dr. E. E. Holt, of Portland, Me., exhibited an auricle bitten off by a horse, and made a brief report of the case; and Dr. C. J. Blake exhibited the plans for the new Aural Building of the Massachusetts Charitable Eye and Ear Infirmary, at Boston.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

J. SOLIS-COHEN, M.D.,

OF PHILADELPHIA.

Spasm of the Larynx.

In an article on the trembling of the vocal bands and the disorders of phonation in disseminating sclerosis of the spinal cord (*Ann. des Mal. de l'Or., du Larynx, etc.*, 1892, No. 2), M. J. Collet, of Lyon, reports an instance in Garel's clinical service, presents a summary of the similar cases previously reported, and makes some general observations. He sums up the functional disorders of the laryngeal muscles into a monotonous and scanning voice, brusque change of tone, elevation of pitch, impossibility to maintain the same note for a long time, stridulous inspiration interrupting laughter or weeping, paralysis of some of the muscles of the larynx, and, finally, the tremulousness of the vocal bands. These phenomena may be combined, or exist isolated, or succeed each other as in the case related.

Collet refers to a case of pharyngo-laryngeal nystagmus reported by Herbert R. Spencer in the *Lancet*, October 9 and 16, 1886.

Under the heading, "A Case of So-called Laryngeal Vertigo," Dr. L. Adler, of New York, reports (*N. Y. Med. Journ.*, 1892, No. 5) a case in which spasmodic cough frequently produced sudden loss of consciousness without vertigo; and which was cured by clipping an elongated uvula. Quite a full summary of the literature of laryngeal vertigo follows the description of the case, which occurred in a gouty man fifty-three years of age. Attention is directed to the circumstance that in all the recorded cases, except one, the patients have been males, most of whom had passed their fortieth year before their first attacks.

Oppenheim reports (*Neurologische Centralblatt*, 1892, No. 5) a case in which there was a tumor the size of an egg in the cerebellum, with marked flattening of the pons and of the medulla oblongata. The roots of the vagus

and of the accessorius were very hyperæmic, with numerous bleedings and a rather well-advanced atrophy. During life there had been trembling of the head and of the upper extremities on voluntary movements only. But there had been a continuous rhythmic tremor of the soft palate as well as of the outer and inner musculature of the larynx.

The larynx was continuously drawn up and lowered. The rhythmic contraction of the crico-thyroid muscle could be felt externally; and on laryngoscopic inspection continuous tremblings (Zuckungen) of the inner laryngeal muscles and the movements of the arytenoid cartilages could be seen. These manifestations, which produced disturbances in deglutition, as well as in speech and voice, had been observed in varying intensity for a period of about two months.

Laryngitis.

Dr. Ragoneau calls attention to the development of catarrhal laryngitis in riders on bicycles and tricycles (*Rev. de Lar., etc.*, No. 22), which he attributes to the inclination of the body forward in speeding, to the necessity for mouth-breathing, and the access of air to the air-passages under pressure produced by rapid movements.

Tuberculosis of the Larynx.

Dr. A. Bertels, of Riga, reports (*St. Petersburg. med. Woch.*, No. 21) two cases in which laryngotomy was practised after preliminary tracheotomy, and the diseased tissues in part scraped away and in part destroyed with the thermo-cautery. Despite good results at first, no tendency to cicatrization was manifested; fresh ulceration took place and both cases terminated fatally, permanent tracheal fistules remaining after removal of the canulas.

Laryngeal Forceps.

Dr. Dundas Grant recently exhibited before the British Laryngological and Rhinological Association (*Journ. of Lar.*, vol. v., No. 12) a pair of guarded double-jointed cutting forceps modelled upon the oral and pharyngeal scissors devised a few years ago by Sherwell, of New York.

A pair of hinged prolongations jointed at their distal extremity form a lozenge-shaped aperture when the forceps are opened, while the hinged distal extremity effectually guards from any other injury than the mere pressure of any tissues with which it may come in contact. It is intended for the removal of growths projecting from the sides of the larynx.

Keratosis of the Larynx.

Under the caption, "Circumscribed Keratosis of the Larynx," Dr. G. Juffinger describes (*Wien. klin. Woch.*, 1891, No. 47) a peculiar bilobed morbid growth occupying the anterior commissure of the glottis and involving the inferior surfaces of the vocal bands, and occurring in a sixteen-year-old female, the subject of ozæna; a few delicate-pointed white projections from the smooth and glistening surface of the growth, and resembling little frag-

ments of bristles or of spicula of fish-bone. Under the microscope these projections were found to consist of an outer sheath of parallel cornified epithelium and a central sheath of irregular epithelium. The histological appearance of these projections and of the basal portion of the growth from which they originated are detailed and illustrated. In view of the abnormal cornifying process which the epithelium had undergone the disease is named circumscribed keratosis of the larynx. The change of ciliary epithelium into squamous is attributed to inflammatory processes, although no evidence of transitional forms could be detected in any of the preparations examined.

Mixed Tumors.

Dr. L. Grünwald of Munich, relates (*Munch. med. Woch.*, No. 41, 1891) an instance in a three-year old child from whose larynx, after tracheotomy, he removed a fibroma from the base of the epiglottis endolaryngeally, and subsequently removed several masses of cauliflower papillomata after direct access by laryngo-fissure. At a later date recurrent papillomata at the base of the epiglottis were removed with the snare.

Congenital Occlusion of the Posterior Nares.

Solly exhibited to the Clinical Society of London (*Journ. of Lar. and Rhin.*, 1892, No. 2), a girl, sixteen years of age, in whom an occluding septum had been perforated and the opening kept patent.

OBSTETRICS.

UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC; CLINICAL LECTURER ON OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE; VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.

The Preparation of Milk for Infant Feeding.

Rotch, in the *Boston Medical and Surgical Journal*, July 21, 1892, selects the milk from a common herd of good average condition. In prescribing milk, he orders fat (in cream or in separated milk), milk-sugar and albuminoids. Freshly prepared lime-water is also employed where indicated. Accepting the researches of Leeds (Journal, June, 1891), which show that sterilization at 212° F. is injurious, he prefers to sterilize at 167° F. He has found an apparatus for separating the fat from the milk by centrifugal force especially useful, only 0.13 per cent. of fat remaining in milk so treated; the "separator" has the further advantage of removing dirt and other foreign matter from the milk. To milk so treated but one-twentieth of lime-water is added to secure a proper reaction.

Ectopic Gestation.

Lawrence (*Bristol Medico-chirurgical Journal*, 1892, No. 36, vol. x.) reports several interesting cases of extra-uterine pregnancy. In one (an abdominal pregnancy) the placenta was allowed to remain after the separation of the cord. It became absorbed without disturbance, the patient making a good recovery. In other cases suppuration occurred in the placenta which remained, and septic infection ensued. In such patients the rule should be to remove the placenta, if possible without severe bleeding; if not, it should be left and the abdomen opened at the first rise of temperature and the placenta removed. A description of several typical cases of ruptured tubal pregnancy closes the paper.

Symphysiotomy.

Charpentier, in the *Nouvelles Archives d'Obstétrique et de Gynécologie*, 1892, Nos. 5 and 6, reviews the literature of the subject, which is chiefly Italian. So far as primary results are concerned, Spinelli's twenty-four operations resulted in the saving of all the mothers, and of twenty-three of the twenty-four children. The operation is performed under antiseptic precautions, the cutaneous incision is closed with catgut and dressed with bichloride gauze. After delivery the patient has three vaginal douches daily, at first of bichloride of mercury solution 1 to 2000, afterward 1 to 4000. The pubes are firmly united in from a month to six weeks, and during that time the patient remains in bed and wears a firm bandage. No case of permanent non-union is reported, the pubes being commonly strongly knit together.

The operation is indicated in cases of the pelvis not so highly contracted that a living fœtus cannot be afterward delivered by version, or, preferably, the forceps. In very highly contracted pelves it is not indicated. Symphysiotomy is advantageous in patients at term with living child in whom the true conjugate of the pelvic brim measures from $3\frac{1}{2}$ to $2\frac{3}{4}$ inches. When the pelvic diameter is smaller than that the Cæsarean section or embryotomy should be performed. Symphysiotomy and induced labor are sometimes successful when the pelvis is smaller than the dimensions given.

Perforation of the After-coming Head.

Winternitz (*Centralblatt für Gynäkologie*, 1892, No. 28) recently encountered the case of a patient who had borne four children in difficult labors. She had a symmetrically contracted pelvis whose true conjugate was three inches. Her child was large, and lay in breech presentation. The body was delivered with difficulty, the head could not be born. It was impossible, from lack of space, to use Smellie's scissors. Decapitation was performed, and the head was turned, by supra-pubic pressure, so that the occiput presented. It was fixed by external pressure and perforated, the brain broken up and evacuated with the finger, and the head delivered by the cranioclast. During the delivery sudden free hemorrhage followed the premature separation of the placenta. The placenta was easily delivered, the uterus and vagina douched. The patient had a normal puerperium.

Rupture of the Uterus During Abortion.

Hektoen (*American Journal of Obstetrics*, July, 1892) reports two cases of extraordinary mutilation of the uterus and abdominal organs during the performance of criminal abortion. In one a rubber catheter had been inserted in a uterus three and a half months pregnant, and the fœtus had been expelled. The abortionist then attempted to remove the placenta, scraping the uterus with a sharp spoon and pulling upon what he supposed to be the cord. A physician summoned in consultation found the patient dying and a loop of intestine protruding from the vagina.

At the post-mortem examination it was found that the catheter had perforated the uterus and lodged behind the liver. In attempting to remove the placenta the abortionist had torn open the cervix and pulled down a loop of intestine.

In the second case a midwife attempted to remove the placenta after spontaneous abortion at four months, by pulling upon the cord. Peritonitis ensued, and a physician curetted the uterus with a dull wire curette. Only half of the intra-uterine douche which was given returned. The patient died twenty-six hours afterward.

At a post-mortem examination the fundus of the uterus was found to have largely disappeared. The most probable explanation of the case is that the midwife produced partial inversion of the uterus by pulling upon the cord, and then gouged off the uterine tissue, supposing it to be the placenta. There is no reason to believe that the dull wire curette in the hands of the physician had anything to do with the rupture of the uterus.

Abdominal Pregnancy.

In the *Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxiv., Heft 1, Sutugin reports two cases of abdominal pregnancy with full post-mortem notes and microscopic examination of specimens. He concludes from his observation of such cases that they occasionally go to term. In early pregnancy they closely simulate intra-uterine pregnancy. Symptoms of compression of the bowel and urethra are manifest earlier than in other kinds of ectopic pregnancy. When the placenta is behind the uterus severe pelvic and sacral pain is felt. The diagnosis is made by a tumor behind the uterus; in the second half of pregnancy a round cystic tumor is found in the abdomen, in which fœtal parts can be felt; in front of the tumor is the uterus. Heart sounds may be heard, but not placental souffle as in tubo-abdominal pregnancy. It is unusual for contractions in the fœtal sac to be felt. The vagina is found encroached upon by an elastic compressible tumor resembling a placenta to the touch. The vagina is elongated; the cervix is high up; the uterus is enlarged.

When rupture of the sac and bleeding occur, Douglas's pouch should be opened at once. When the fœtus is viable or has perished some time previously, abdominal section is indicated.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,

OF NEW YORK.

Carcinoma and Fibro-myoma of the Uterus.

Ehrendorfer (*Archiv für Gynäkologie*, Bd. xlii., Heft 2) has carefully examined the evidence on this disputed subject and arrives at the following conclusions: 1. The association of cancer and fibro-myoma of the corpus uteri is less rare than has been heretofore supposed, and its clinical importance should be recognized. 2. In every case of hystero-myomectomy, before treating the stump, the specimen should be examined to see if the endometrium has undergone cancerous degeneration. 3. If cancer is found in addition to the fibro-myoma, or even if the former is suspected, complete extirpation should be practised. 4. No method of treating the stump after hystero-myomectomy (even though excision and cauterization of the cervical mucosa) can promise entire immunity from recurrence under these circumstances. 5. If in a case of fibroid uterus there is a watery, sanguineous discharge, accompanied with severe colicky pains (especially at the climacteric), the development of malignant degeneration of the corporeal endometrium should at once be suspected and a radical operation should be performed.

[We have repeatedly emphasized the importance of thoroughly exploring the uterine cavity with the curette in cases exhibiting the symptoms above described *before* resorting to the radical operation. Only thus can we positively exclude sloughing intra-uterine fibroid.—H. C. C.]

Retro-peritoneal Treatment of the Stump after Supra-pubic Amputation.

Johannovsky (*Archiv für Gynäkologie*, Band xlii., Heft 2) regards Chrobak's method as the ideal one. He reports five successful cases, two of hystero-myomectomy and three of Porro's operation, in all of which the cervix was preserved but was treated extra-peritoneally. Chrobak (who has had seventeen successful cases) has described his method at length, its essential feature being the fact that two peritoneal flaps are dissected from the anterior and posterior surface of the tumor, which are afterward united over the surface of the stump, drainage being secured by carrying a strip of iodoform gauze down through the cervical canal into the vagina. Johannovsky thinks that in cases of Porro's operation, in which the uterus has become infected, it would be better to remove the entire uterus and drain *per vaginam*, not closing the peritoneal wound.

Albert (*Wiener med. Presse*, 1892, No. 29) credits Goffe and Dudley, of New York, with priority in the conception, if not in the exact technique, of this operation. Albert has himself modified the method of treating the stump as follows: After ligating the upper portions of the broad ligaments the mass

of the tumor is removed, the cervical canal is cauterized, tamponed with gauze, and temporarily sutured. The stump is then shelled out of its peritoneal covering as low as the level of the uterine arteries, which are tied and the entire supra-vaginal portion of the stump is excised. There is left a pouch of peritoneum, at the bottom of which is the small remaining portion of the cervix; this pouch is sutured into the lower angle of the wound (being carefully united to the parietal peritoneum), and is drained in the usual manner from above, which drainage may also be maintained *per vaginam* through the cervical canal.

Primary Cancerous Degeneration of Uterine Fibro-myomata.

Ehrendorfer (*Centralblatt für Gynäkologie*, 1892, No. 27) reports a case of this nature, the existence of which was formerly denied by competent pathologists, even by Gusserow. The development of cancer in this connection may be referred either to the endometrium covering the fibro-myoma or to a change in its internal structure. In the former case the disease is doubtless due to the presence of chronic hyperplastic endometritis, the hypertrophied glands growing downward into the substance of the tumor, as in cases reported by Buhl and Hofmeier. These are to be carefully distinguished from such a case as that described by Ruge and Veit, in which cancerous degeneration of a myoma was clearly secondary to malignant disease of the endometrium. Klob and Gläser describe cases of true carcinomatous degeneration of the fibro-muscular tissue, to which class belongs that reported by the writer. Others have been reported by Buhl and Galalien.

Hysterectomy for Fibroid Tumors—Péan's Method.

Péan (*Gazette de Gynécologie*, August 1, 1892) claims to have reduced the technique to the simplest form by pursuing the following method: The tumor is constricted with a rubber cord as near to the cervix as possible, and the mass is removed; if there are several lobes each is constricted separately and removed. It is not always necessary to dissect away the bladder and rectum from above, but this may readily be done. The stump is now encircled by a wire, is trimmed down as much as possible (sparing its serous covering), and the abdominal wound is closed. The stump, with the wire, is then removed *per vaginam*, the broad ligaments being secured with forceps.

Tubal Menstruation.

Landau and Rheinstein (*Archiv für Gynäkologie*, Band xlii., Heft 2) throw fresh light on this interesting subject by their study of the condition of the mucous membrane of the genital tract in cases of atresia and malformation. Their observations were briefly as follows: The endometrium was unchanged. The tubal mucosa alone appeared to have been functionally active, having undergone general hypertrophy. In cases of atresia, as well as of malformation of the genital tract, mucosa was at first normal throughout, but the endometrium subsequently became destroyed in consequence of the pressure of the retained menstrual blood; the mucosa of the tube was most resistant, on account of its greater power of absorption, but finally it also

suffered from pressure. Hitherto there have been two theories with regard to the origin of hæmatosalpinx in cases of atresia—the reflex theory of Goupil and Bernutz, and the view that the blood transudes from the tubal mucosa. Although the former is probably correct, it has not yet been positively proved. The writers believe that they are the first to present anatomical facts which seem to substantiate the latter view. In the most striking case the tube was uniformly swollen, its serous covering was deeply congested, and the mucous membrane was much thickened and filled with blood-corpuscles, the vessels, not only of the mucosa but of the entire tubal wall, being greatly dilated. The uterus, on the contrary, was absolutely normal, neither the endometrium nor the muscular tissue showing any signs of congestion or infiltration, the vessels containing little blood, and the uterine cavity being empty. It would seem to follow from this that the tubes had menstruated, and that they alone took part in the process.

Parenchymatous Injections of Saline Solution in Acute Anæmia.

Kortmann (*Deutsche med. Wochenschrift*, 1892, No. 16) is opposed to intravenous infusion of saline solution in cases of hemorrhage, because the resulting increase in the blood-pressure favors a renewal of the bleeding. Even when the source of the hemorrhage has been controlled by ligature or tamponade, the over-filling of the venous system may lead to cardiac paralysis.

He prefers subcutaneous injections, except when the circulation is so depressed that absorption does not take place, when a few ounces may be infused into a vein. He injects above twenty ounces of a one-half per cent. solution beneath the fascia of the thighs. Of six cases of intra-venous infusion only one was successful, while four out of five cases of parenchymatous injection survived.

The Internal Crossing (Ueberwanderung) of the Ovum.

Veit (*Centralblatt für Gynäkologie*, 1892, No. 27) criticises the views of Wyder and Pestalozza on this vexed question, who sought to show by reference to certain anatomical specimens that the impregnated ovum might escape from one tube into the uterus, and crossing the uterine cavity enter the opposite tube. The affirmative evidence was deduced from cases of tubal pregnancy in which the distal end of the affected tube was impervious; but, as is well known, the closure may occur *after* impregnation has taken place. All the evidence seems to be in favor of the belief that this supposed internal crossing of the ovum never occurs.

Combined Tuberculous and Gonorrhœal Endometritis and Salpingitis.

Saulmann (*Centralblatt für Gynäkologie*, 1892, No. 27) reports the case of a young woman with purulent endometritis, who suffered from severe shooting pains in the lower part of the abdomen. A drop of pus from the cervix was found to contain tubercle-bacilli as well as gonococci. Under the use of vigorous anti-specific treatment (vaginal irrigation with four per cent. solution of nitrate of silver and intra-uterine applications of corrosive sublimate, and

chloride of zinc solutions) the gonococci diminished in number and finally disappeared, but the tubercle-bacilli remained unchanged. There were no evidences of pulmonary disease. The writer cites this case as an evidence of the valuable aid afforded by the microscope in the diagnosis of the origin of uterine discharges, the intractable varieties of which will usually be found to contain specific microörganisms. In the case reported salpingotomy alone would not have been sufficient to eliminate the tuberculous focus, which was in the uterus as well as in the tubes, but hysterectomy was also indicated.

The Position of Dermoid Cysts with Relation to the Uterus.

Freund (*Centralblatt für Gynäkologie*, 1892, No. 31), after discussing this question at considerable length, arrives at the conclusion that when a dermoid cyst is found anterior to the uterus it has developed in an ovary which was congenitally displaced, and that when displaced it tends, like a normal ovary, to return to its former position.

The Treatment of Inoperable Carcinoma by Injections of Alcohol.

Schramm (*Centralblatt für Gynäkologie*, 1892, No. 31), adopting Schulz's suggestion, practised deep injections of alcohol in severe cases of cancer of the cervix uteri, but was obliged to abandon the treatment on account of the unbearable pain which they occasioned. Although the hemorrhage ceased in some instances during the treatment, there was no change either in the appearance of the diseased parts or in the amount of foul discharge.

PÆDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,

OF PHILADELPHIA;

ASSISTED BY

THOMPSON S. WESTCOTT, M.D.,

OF PHILADELPHIA.

Cirrhosis of the Liver in Childhood.

Jollye (*British Medical Journal*, April 23, 1892, p. 858) presents the histories of two cases of hepatic cirrhosis occurring in children of the same family, one a boy, aged eleven years, the other his sister, aged ten years. The family history was free from any signs of rickets, syphilis, or scrofula; the parents were temperate; and neither of the children had been given alcohol for any purpose for more than four years before death. The only facts bearing any relation to the question of etiology were that both children had previously had measles and that both of them were inordinately fond of vinegar, which they would drink at every possible opportunity. To this

habit the author is inclined to attach some importance, believing that vinegar, by lessening gastric secretion, may so interfere with digestion as to cause the formation of digestive irritants (albumoses and allied bodies) which, after absorption by the portal system, are capable of setting up a hyperplasia of the connective tissue related to this system in the liver.

A recent paper by STACK (abstracted in THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, June, p. 728) analyzed a series of 20 selected cases of this disease occurring in children under twelve years of age, averaging five years; and, leaving out cases of fibrous change due to previous gummatous formations, that author found no evidence to confirm the view that syphilis, rickets, or malaria could be considered as holding any etiological importance. In the present paper JOLLYE analyzes 112 cases under eighteen years of age, and, as might be expected from the approximation to adult age, he finds that alcohol and syphilis act as causes,but to a much less extent than at one time was supposed. The conclusions which he formulates may be given *verbatim:*

1. That alcohol, syphilis, tuberculosis, and malaria account for 50 per cent. of the cases, the other most frequent causes being probably the exanthemata and errors in diet.

2. That acute interstitial hepatitis is frequently found microscopically after the infectious fevers, especially after measles and scarlet fever; but the part played by the disease, alcohol, and diet respectively in those cases which afterward become examples of cirrhosis is an open question, as is also the reason why some livers are affected with the hypertrophic, and others with the simple form.

3. That the symptoms may be wholly referable to the nervous system, the relation of the pathological changes in the liver to those in the brain being undetermined.

4. That severe pyrexia, quick pulse, and increased frequency of the respirations are frequent symptoms, and may make difficult the diagnosis from tuberculosis, typhoid, and other fevers.

5. That the symptoms of failing health in children, with no marked adequate cause, especially if associated with epistaxis or other hemorrhages, the development of nævoid growths, or the occasional presence of jaundice, should lead us to examine the liver for signs of cirrhosis.

6. That the later symptoms depend upon whether the canal system of the liver is chiefly involved, or whether the parenchyma chiefly suffers.

7. That nearly half the cases occur between the seventh and thirteenth years, and that males are nearly twice as frequently attacked as females.

8. That if all severe symptoms disappear under treatment they will certainly reappear and end fatally within, at the outside, as far as we know at present, a period of three years.

9. That the best treatment appears to be a tonic one, combined with special treatment for special symptoms.

10. That some cases are part of a general disease, due to some poison getting admission to the general circulation, and especially attacking the liver, owing to the slow circulation in the hepatic capillaries, just as, no doubt, acute yellow atrophy is a general disease, the chief pathological change found *post-mortem* having caused it to be classified amongst the diseases of the liver.

The Resorcin Treatment of Pertussis.

In the *Annales de la Policlinique de Paris*, 1892, June, p. 265, Moncorvo, of Rio de Janeiro, again calls attention to the continued success of his treatment of pertussis by local treatment of the peri-laryngeal mucous membrane by resorcin. This method of treatment was proposed by Moncorvo in 1883, and has been generally adopted by the profession in Brazil, but has found little favor upon the continent of Europe, although strong supporters have been found in every country where it has been carefully tried. The exact technique of the procedure is important in order to secure satisfactory results, and the author now gives careful directions for its successful practice. He prepares a chemically pure solution of resorcin in sterilized water, of a strength of 10 per cent. The applicator consists of a thick brush of very fine hairs affixed to a long handle of flexible iron wire, which can be readily moulded to suit the proper curvature of the patient's mouth and throat. In addition to these preparations a large vessel of boiled or sterilized water is kept close at hand, and in this the brush is rinsed after each application to the throat. The child is held sitting upon the mother's lap, its body inclined backward a little upon her breast. Sometimes, but not always in the author's experience, with older children, it is necessary to have an attendant hold the hands. The applications are made during the day, every two or three hours, according to the gravity of the case, each *séance* affording four to six brushings with the resorcin solution. When there is excessive excitability of the laryngeal mucous membrane, the first few brushings are preceded by an application of a cocaine solution of a strength of 5 to 10 per cent., care being taken that the brush is not strongly charged with the solution, and that only one brushing is made. Such applications of cocaine are generally made twice a day, in the morning and evening. In the gravest cases the author employs, in addition, antipyrine in daily dose of 1 to 3 grammes, according to age, and inhalations of pyridine, which latter drug he claims to have been the first to recommend for this purpose. By this method of treatment the author has established a perfect prophylaxis for children obliged to live with others suffering from the disease, has often aborted an attack at the beginning in twenty-four hours, and has cured well-marked cases in periods varying from nine days to two weeks.

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All communications should be addressed to

Dr. EDWARD P. DAVIS,
250 South 21st Street, Philadelphia.